

Biology Department, Middle Tennessee State University, Spring 2006



### Chair's Message: We're back!

Sorry to have skipped the 2005 edition, but Dr. Philip Mathis, our previous editor and primary writer, was appointed interim dean of the Honors College and had to cut down on other activities. We congratulate Dr. Mathis on his successes in that position and gratefully welcome Dr. John DuBois as new editor, wishing him equal success.

Those who have received previous newsletters are familiar with our quest for new and improved facilities. Since 1997, MTSU has moved up the Tennessee Board of Regents' (TBR) list of capital projects and is now near the top. We have every reason to anticipate planning funds for new science facilities in the next state budget. With that in mind, we continue to refine our space needs and the academic plan for instruction and research. Contact your state legislators and emphasize the importance of adequate facilities in the education of our next generation of scientists, physicians, pharmacists, nurses, etc.

Even under severe space constraints, faculty and students had a very success-

*continued on p. 2*

## Faculty Recognized for Community Service



**William H. Butler Jr., Cindi Smith-Walters, and Padgett Kelly** were recognized in spring 2005 for their community service efforts. **William Butler** received the Harold Love Outstanding Community Service Award in April for his work on urban renewal and his leadership roles in anti-drug organizations. He has devoted considerable time to help reduce crime and drug use in communities throughout Murfreesboro. As a result, residents of these communities are taking more pride in their neighborhoods. The Harold Love Award is presented to volunteers in community work, public service, charitable service, and service in leadership roles in community organizations. Recipients serve as ambassadors for community service within Tennessee. Butler joined the Biology faculty fulltime in 1990 and has taught Topics in Biology and Human Anatomy and Physiology.

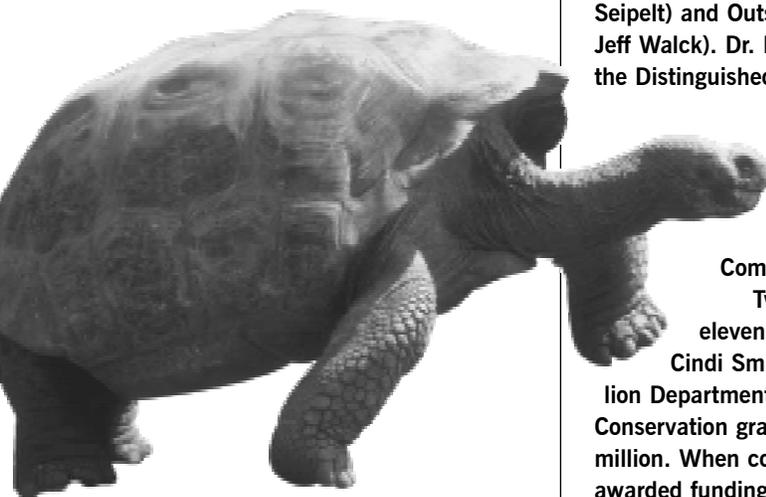
**Cindi Smith-Walters** has been appointed to a three-year term on the Clean Tennessee/Keep America Beautiful Advisory Council. Members are appointed by Governor Phil Bredesen based upon their background and knowledge about the environment, litter prevention, public education, and resource management. Cindi is codirector of MTSU's Center for Environmental Education. Those familiar with the center know of the many projects and programs initiated by Cindi. Under her codirection, the center has had a strong record of securing grants and contracts in excess of \$1 million for improvement of environmental awareness and management in Tennessee. Recently, the center received \$1.14 million from the Department of Environment and Conservation to help urban areas across the state target a major source of water pollution. Cindi joined the Biology faculty in 1993. She taught Biology for Elementary Teachers and Topics in Biology.

Largely because of his popular marine biology presentations in elementary schools, **Padgett Kelly** received

*continued on p. 5*

## We're back!

continued from p. 1



ful year. Faculty taught over 6,000 students and were active in all areas of academic responsibility. They held offices in over twenty organizations, highlighted by leadership positions in the Tennessee Academy of Science (Dr. Steve Wright, president; Mrs. Sarah Swain, secretary; and Dr. Gore Ervin, journal editor). Dr. Brian Miller continued editing *Caudata Accounts of the Catalogue of American Amphibians and Reptiles* (SSAR). MTSU Foundation Awards were given for Instructional Technology (Dr. Rebecca Seipelt) and Outstanding Research (Dr. Jeff Walck). Dr. Padgett Kelly received the Distinguished Service Award from

the Tennessee Environmental Education Association, and Mr. William Butler received the THEC Outstanding Community Service Award.

Twelve faculty received eleven external grants (led by Cindi Smith-Walters' \$1.14 million Department of Environment and Conservation grant) for a total of \$1.88 million. When combined with previously awarded funding of over \$812,000, total external funding for the year was \$2.7 million. In addition, faculty engaged in

over 300 public service presentations/consultations/training sessions.

As anyone associated with the department knows, the campus recycling program, initiated by Dr. Pat Doyle and the Biology Club in the early 1970s, has been recognized as one of the nation's oldest and most successful. Due to changing faculty expectations, in June 2005 responsibility was transferred from Biology to the MTSU Maintenance Department under the Center for Energy Efficiency. While this will significantly impact new scholarships, we will continue annual awards of the 37 scholarships totally or partially funded by recycling.

On a final but significant note, faculty played a major role in developing a proposal to establish a Ph.D. degree in Interdisciplinary Sciences (i-Sciences). Proposal development took place over the past year, and at this point approval rests with the TBR and the Tennessee Higher Education Commission.

As always, we appreciate hearing from you. Check our Web site, and e-mail news that we can include in the next *BioUpdate*. Your consistent support and encouragement give added meaning to what we do! ●

## New Graduate Degrees Involve Department

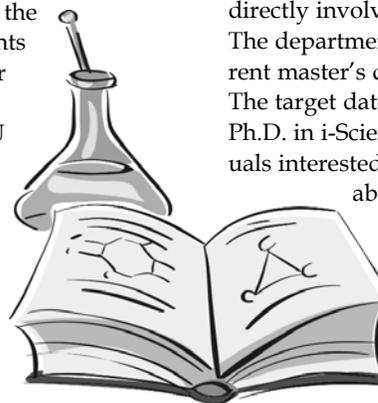
The Biology Department is included in two new graduate degree programs at MTSU. The Tennessee Board of Regents and the Tennessee Higher Education Commission have approved a new master's degree in Professional Science which officially began in January of 2005. Professional Science Master's (PSM) programs prepare graduates for entry-level positions in business, government, and nonprofit organizations. PSM programs generally consist of a core of advanced work in a discipline or an interdisciplinary area along with work in information technology. The PSM at MTSU features a 12-hour professional business core and a 21-hour concentration in either Biostatistics, Biotechnology, or Health Care Informatics, including a 3-hour internship.

A grant from the Alfred P. Sloan Foundation funded the creation and implementation of this new program. An office has been established in the College of Basic and Applied Sciences. Rebecca Seipelt, Biology Department, serves as coordinator for the Biotechnology concentration.

In a separate action, the Tennessee Board of Regents and the Tennessee Higher Education Commission recommended that MTSU develop a proposal to establish a Ph.D. in Interdisciplinary Sciences (i-Sciences). The College Committee reviewed six concentration proposals for the

i-Sciences Ph.D. and recommended that the areas of Computational Science, Symbiosis Studies, and Chemical Education submit proposals for their concentrations. Once the program is in place, it is anticipated that other concentration areas will be added. The i-Sciences degree represents the first Ph.D. program at MTSU that would directly involve the Biology Department. The department has maintained the current master's degree program since 1966. The target date for the initiation of the Ph.D. in i-Sciences is fall 2006. Individuals interested in more information

about these programs can visit the following Web sites: [www.mtsu.edu/~graduate/psm](http://www.mtsu.edu/~graduate/psm) and [www.mtsu.edu/~graduate/pdf/PHD/iSciences.htm](http://www.mtsu.edu/~graduate/pdf/PHD/iSciences.htm). ●



# Increase in Student Research Brings Grants, Presentations, Publications

The Biology Department has seen a dramatic increase in the number of students conducting research of their own design. This is especially true among undergraduates. The department has maintained a master's level graduate program for several decades, which includes a research component for the thesis. Although graduate enrollment has steadily increased over the years, it is undergraduate research that has seen the most growth. Several factors are responsible. First, newer faculty are under greater pressure to conduct research and to publish, and undergraduate students are a great resource for accomplishing numerous research projects. Second, more students are becoming interested in graduate programs after receiving B.S. degrees at MTSU. By conducting research at the undergraduate level, these students tend to increase their chances of being accepted into top-notch graduate programs.

Due to limited facilities, research space in the department has been small. However, with the recent hiring of biology faculty with molecular emphases in their research, students are able to conduct research in limited space. The spring 2002 conversion of room 131 in DSB from a lecture room to a biotechnology laboratory enhanced the ability of students and faculty to conduct molecular projects. Third, the number of students completing internships off campus has been increasing, and many of these students return to campus excited about being part of a research team outside MTSU. They want to continue that excitement by conducting research as part of their undergraduate educational experience. Last, several courses offered by the department require students to conduct independent research. Courses such as Genetics, Human Genetics, and Developmental Biology have a research component. Some students completing one or more of these courses continue their research into additional semesters.

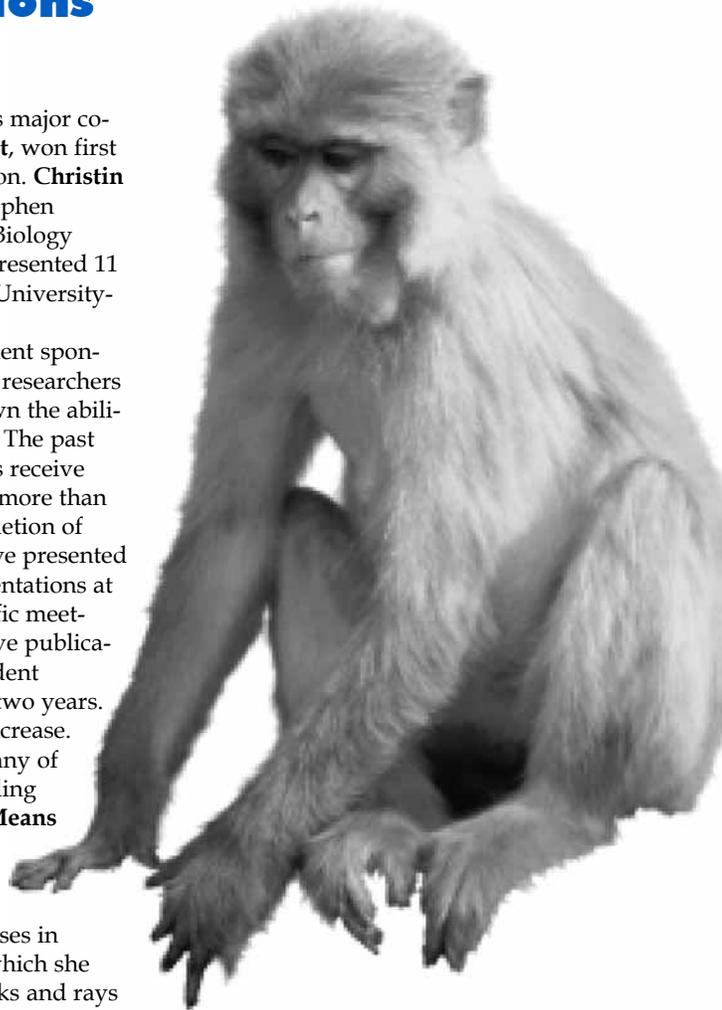
Undergraduate students presented 15 of the 39 posters at the 2004 Undergraduate Research Symposium. **Dr. Rebecca Seipelt** mentored ten of those fifteen students. Adam Farmer,

a biology/chemistry/physics major co-mentored by **Stephen Wright**, won first place in the poster competition. **Christin Tinkle**, also mentored by Stephen Wright, tied for third place. Biology undergraduate researchers presented 11 of the 63 posters at the 2005 University-wide Scholars Day.

Not only has the department sponsored and supported several researchers but these students have shown the ability to secure outside funding. The past two years have seen students receive over a dozen grants totaling more than \$15,000. Following the completion of several projects, students have presented over 35 oral and poster presentations at regional and national scientific meetings. Additionally, at least five publications have resulted from student research projects in the past two years. These numbers are sure to increase.

Following graduation, many of these students go on to fulfilling research careers. **Bailey McMeans** (B.S. '04, currently attending graduate school at UGA) participated in two National Marine Fisheries Service cruises in the Gulf of Mexico, during which she collected parasites from sharks and rays for **Dr. Benz**. **Mark Whitten** (B.S. '04, currently attending Oxford-Brookes University in England) interned at the Nashville Zoo and went on to conduct research at the Primate Immunogenetics and Molecular Ecology lab at the University of Cambridge. It was during this research that Mark had the opportunity to meet esteemed primatologist Jane Goodall at a conference in Bristol, England. Mark has applied to Darwin College of the University of Cambridge to begin work on his doctorate in the PRIME lab this fall.

**Mark Hooper** (undergraduate student) and **Andrew McElwain** (graduate student) each participated as part of the science staff at the annual Monster Shark Fishing Tournament held in 2004 at Martha's Vineyard, Massachusetts. Mark worked with scientists from the National Marine Fisheries Service, the Massachusetts Division of Marine Fisheries, and the University of Hartford collecting scientific data and biological samples. Both students are mentored by **George Benz**.



In addition to the list of oral and poster presentations given below, 23 biology students authored or co-authored presentations (oral and poster) at the 2004 meeting of the Tennessee Academy of Science (TAS) and 19 at the 2005 meeting of TAS. Ten students received awards for their presentations at the 2004 meeting of TAS and six received awards at the 2005 meeting (see related article). Below is a list of presentations, grants received (and amounts), and publications by undergraduate (U) students and graduate (G) students in the Biology Department.

## Student Presentations

**Terry Banaszak** (U), **Heidi Yu** (U), and **Laura Eckard** (U) copresented "Expanding Our Understanding of the Microbiocidal Properties of Chlorine Dioxide (ClO<sub>2</sub>) Using Newer Generation Technology" and "Expanding Our

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## Student Research *continued from p. 3*

Understanding of the Microbicidal Properties of Chlorine Dioxide: A Field Trial" at the 2005 Undergraduate Scholars Day.

**Sarah Collins** (G), along with advisor Stephen Wright, presented "Detection of Borrelia Species among Ticks Collected from Selected Eastern States" at the 2004 Annual Meeting of the American Society for Microbiology in New Orleans.

**Dwayne Coleman** (G) presented "Table Mountain Pine (*Pinus pungens* Lamb.) Regeneration Following a Wildfire in the Cherokee National Forest/Foothills Parkway, Tennessee" at the 2004 Annual Meeting of the Association of Southeastern Biologists and copresented "Species Composition of Early- and Late-Successional *Pinus Pungens* Forests" at the 2005 MTSU Graduate and Faculty Scholars Day.

**Kimberly Cubit** (U) presented "Melanoma Patients' Perceptions and Attitudes toward Genetic Testing" at the 2005 Undergraduate Scholars Day.

**Olivia Dees** (U) and **Christopher Meyers** (U) presented "Potential Allelochemicals in *Kalmia latifolia* and Their Effect on *Pinus pungens* Seed Germination" at the 2005 Undergraduate Scholars Day.

**Adam Farmer** (U) and **Christin Tinkle** (U), along with advisor Stephen Wright, presented "Fluorescence-Based Detection and Differentiation of Bacterial Antigens by Specific Antibodies Bound to Glass Substrates" at the 2004 Annual Meeting of the American Society for Microbiology in New Orleans.

**Jesse Gilliam** (U) and **Brock Arivett** (G) presented "The Isolation and Identification of a Bacterial Pathogen from Hot Tub Amoebae" at the 2005 MTSU Undergraduate Scholars Day.

**Brad Glorioso** (G) and **Elizabeth Young** (G) presented "Population ecology of stinkpots (*Sternotherus odoratus*) at Reelfoot Lake, Tennessee" at the 2005 Tennessee Herpetological Conference in Lebanon, Tennessee.

**Jeff Green** (G) presented "Daily Body Temperature Selection of Black Racers (*Coluber constrictor*) in Middle Tennessee" at the 2004 Joint Annual Meeting of the American Society of Ichthyologists and Herpetologists, Herpetologists' League, and Society for the Study of Amphibians and Reptiles in Oklahoma City, Oklahoma; "Thermal Habitat Variation for an Active Diurnal Snake" at the 2005 Joint Annual Meeting of Ichthyologists and Herpetologists in Tampa, Florida; "Body Temperature Selection of Black Racers (*Coluber constrictor*) in Middle Tennessee" at the 2005 Annual Meeting of the Association of Southeastern Biologists in Florence, Alabama; and "The Daily Thermal Profile of Black Racers (*Coluber constrictor*) in Middle Tennessee" at the 2004 Annual Meeting of the Association of Southeastern Biologists in Memphis.

**Chad Hanna** (G) presented "Effect of Temperature on Hatching and Nest Site Selection in the Green Lynx Spider, *Peucitia viridans*" at the 2005 Annual Meeting of the Association of Southeastern Biologists in Florence, Alabama.

**Jason Hayes** (G) presented "Use of Biological and Antibiotic Strategies for the Isolation of a Bacterial Amoebal Pathogen from a Cooling Tower Biofilm" at the 2005 MTSU Graduate and Faculty Scholars Day.

**Benjamin Jordan** (G) presented "Potential Role of Avians in the Distribution of *Borrelia* Species" at the 2005 Annual Meeting of the American Society for Microbiology in Atlanta, Georgia, and at the 2005 MTSU Graduate and Faculty Scholars Day.

**Kimber Logan-Dunn** (G) coauthored a poster, "Isolation and Identification of Lipase-Producing Microorganisms," with advisor John Zamora at the 2004 Annual Meeting of the American Society for Microbiology.

**Megan Musick** (U) presented "Characterization of Bacterial Pathogens of Amoebae" at the 2005 MTSU Undergraduate Scholars Day.

**Katherine Onks** (U) presented "Microarray Detection and Differentiation of Antigen-Antibody Binding" at the 2005 MTSU Undergraduate Scholars Day.

**Randi Paschall** (G) copresented "Encouraging MTSU Women in Science, Technology, Engineering, and Mathematics (STEM)" at the 2005 MTSU Scholars Day.

**Jake Pruett** (U) presented "Is Thermocomformity the Norm for Timber Rattlesnakes?" at the 2004 Tennessee Herpetological Conference in Lebanon, Tennessee.

**Jake Pruett** (U) and **Jeff Green** (G) presented "Body Temperatures of Eastern Racers, *Coluber constrictor*, and Timber Rattlesnakes, *Crotalus horridus*, during Changes in Environmental Conditions" at the 2005 Annual Meeting of Ichthyologists and Herpetologists in Tampa, Florida, and at the 2005 MTSU Undergraduate Scholars Day.

**Christin Tinkle** (U) and **Katherine Onks** (U) copresented "Surface Wave Biosensor Using Multilayer Si/TiO<sub>2</sub> Films with Thin Organosiloxane Interfacial Coating" at the 2005 MTSU Graduate and Faculty Scholars Day.

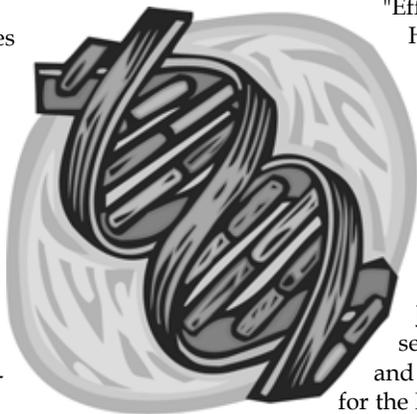
**Joseph Welch** (G) presented "A Genome-Wide Screen in *Saccharomyces cerevisiae* Reveals Increased Secretion of Resident ER Proteins" at the 2005 MTSU Graduate and Faculty Scholars Day.

**Tim Worrall** (U), **Jeff Green** (G), **Jake Pruett** (U), and **Brad Glorioso** (G) presented "Initial Den Location Behavior by a Litter of Timber Rattlesnakes in Tennessee" at the 2004 Joint Meeting of Ichthyologists and Herpetologists in Oklahoma City, Oklahoma, and at the 2004 Annual Meeting of the Association of Southeastern Biologists in Memphis. These same authors presented "Early Movement Behavior in a Litter of Neonate Timber Rattlesnakes" at the 9th Annual Rocky Mountain McNair Research Symposium and Graduate Education Conference 2004 at Colorado State University and at the 2004 Tennessee Herpetological Conference in Jackson.

## Student Grants

**Jennifer Freimund** (G) received a Sigma Xi Grant-in-Aid for Research award of

*continued on p. 7*



## Faculty Recognized

*continued from p. 1*

the Distinguished Service Award from the Tennessee Environmental Education Association (TEEA) in 2005. As codirector of the University's Center for Environmental Education and a TEEA participant since the association's beginning, Kelly has used his position and influence to expand awareness of local and global environmental issues. He is especially known for his presentations involving a life-size inflatable whale. Kelly has taken the whale to hundreds of schools, exposing tens of thousands of students to biology on a grand scale. He also leads an annual summer biology enrichment trip to the Florida Keys for students and area teachers.

The Biology Department is very proud of William, Cindi, and Padgett for their devoted service to the communities of middle Tennessee and the entire state and congratulates them on their accomplishments. ●

## BioUpdate

**George G. Murphy,**  
department chair

**John DuBois,** editor

**Key contributors to this issue are Cynthia Allen, Kurt Blum, Phil Mathis, Charles McGhee, Virginia McKnight, and Cindi Smith-Walters**

[www.mtsu.edu/~biol/](http://www.mtsu.edu/~biol/)

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## New Faculty and Staff

The Biology Department is pleased to announce the hiring of a new faculty member and a new staff member. Dr. Jerry Reagan joined the department in fall 2005 as an associate professor. Ms. Jennifer Anderson joined the department in fall 2004 as a secretary, and in fall 2005 she was reclassified as a technical clerk.

### Jennifer Anderson



Jennifer was born and raised in Kingsport. She earned her associate's degree in office administration technology from Northeast State Community College in

Blountville, Tennessee, in May 2004. In fall 2004 she was hired as a department secretary and in fall 2005 became the department's technical clerk, managing budgets and accounting. She is working toward a bachelor's degree in business administration at MTSU. Jennifer was married (May 21, 2005) to John Anderson, a May 2005 graduate of the Aerospace Department. He works as a flight instructor at the MTSU Flight Operations Center at the Murfreesboro airport. Both she and John operate a bus on Sundays, transporting local underprivileged children to and from church. Jennifer and her husband are both musicians as well. She plays the flute, violin, and piano, plus a few other instruments.

### Jerry Reagan, Ph.D.



Jerry is a native of Ocala, Florida, where he and his family lived until his junior year in high school, when they moved to Bryson City, North Carolina. He

received his B.S. in biology from Mars Hill College in Mars Hill, North Carolina. Jerry completed his Ph.D. in molecular and cellular pathobiology at the Wake Forest School of Medicine in 1990. He completed two postdoctoral research positions before his first faculty appointment. Following the completion of his Ph.D., Jerry was a postdoctoral fellow in biochemistry at Dartmouth University Medical School. His research investigated the biochemistry and molecular biology of cholesterol metabolism in normal and mutant Chinese hamster ovary cells. In 1992, he returned to Wake Forest, where he began a second postdoctoral position investigating the relationship between cholesterol metabolism and heart disease using macrophages. He joined the faculty at Wake Forest in 1995, first as instructor then as assistant professor. With his strong desire to become more involved in undergraduate education, Jerry accepted an associate professor position at MTSU. He teaches the Cellular and Molecular Biology course. In his research, he is investigating the posttranslational cholesterol regulation of the enzyme, acid sphingomyelinase. Jerry spends much of his "spare time" prepping the Cellular and Molecular Biology course and spending time with his family. Jerry and wife Harriet have two children, David and Elizabeth.

# Center for Environmental Education

**“That is what learning is. You suddenly understand something you’ve understood all your life, but in a new way.”**

**Doris Lessin**

*Cynthia Allen and Cindi Smith-Walters*

**T**his quote fits what the Biology Department’s Center for Environmental Education (CEE) actually does. Involved faculty and staff open the windows of minds young and old alike to new ways of viewing and thinking about the “same old stuff.” With these expanded views, the world suddenly becomes a much bigger place!

The CEE main office is located in the Fairview Building, 103 Fairview (formerly Belle Aire Baptist Church). In the past 10 years, the CEE has grown from two biology faculty members who received some release time to codirect the center

**Amanda Sherlin** recently accepted the position of executive aide and will assist with the WaterWorks! program. Her immediate background includes accounting and music, but as a fairly new parent, she has become more interested in water quality issues and their environmental effects. This interest and her abilities have made her a welcome addition.

**Karen Hargrove** continues as the CEE’s director of natural resources (i.e. WaterWorks!). Her work has extended the center’s education outreach arm through a media campaign championing individual action to improve water quality. Since the 2003 program kickoff, WaterWorks! (funded by the Tennessee Department of

Agriculture/Non-point Source Pollution) has provided stormwater programs in Tennessee with a unified “voice” for cleaner water. More than 85 stormwater programs are required to conduct public education but often lack the personnel, experience, or funding to meet the requirement. Therefore statewide, they may buy into a water quality media campaign that returns up to 10 times the value of their investment.

Additional education materials are continually being developed and made available.

Through WaterWorks! the center has strengthened its partnerships with TVA by hosting a number of workshops for the Tennessee Growth Readiness Program; the Tennessee Association of Broadcasters through campaign announcements; the Tennessee Wildlife Resources Agency by including Tennessee Wild Side programs in a DVD project; the Center for Industrial Studies through the Stormwater and Erosion video-to-DVD project; the Renaissance Center in Dickson by working with them on that same video-to-DVD project; TDEC by hosting a TMDL workshop for the Division of Water Pollution Control; and many, many others that include but are not limited to Rutherford County, the Cumberland River



The Center for Environmental Education’s WaterWorks! program received a five-year, \$1.14 million state grant to educate Tennessee residents on used oil recycling and responsible auto fluid management. From left are Jim Fyke, commissioner, State Department of Environment and Conservation; Karen Hargrove, CEE director; Chuck the Catfish; MTSU President Sidney McPhee; and Paul Sloan, deputy environment commissioner. One quart of motor oil can pollute thousands of gallons of water, and getting the word out will raise awareness of local stormwater programs. *photo by Ken Robinson*

to three additional full-time and two part-time staff members as well as other faculty who receive no release time but are highly involved in community outreach.

The CEE welcomed **Cynthia Allen**, an MTSU Biology alumna, to its ranks in October 2005 (see Alumni News). Cynthia looks forward to meeting the diverse public served by the CEE and participating in a number of community outreach programs as both an employee and volunteer. Of special interest to her is TAMP (Tennessee Amphibian Monitoring Program; see related article p. 20). Cynthia hopes to become trained and add to the growing quantity of information concerning frog and toad populations statewide.

Compact, and the local Stones River Watershed Association. WaterWorks! has gained national recognition through multiple presentations at American Water Resources Association conferences, Best Education Practices for Stormwater Programs conferences, the University of Wisconsin, the Southeast Watershed Forum in Nashville, the Fourth National Conference on Non-point Source and Stormwater Pollution Education programs in Chicago, and several others.

Karen's fabulous work with this program was recognized with additional WaterWorks! funding in September 2005. At that time, a \$1.14 million grant from the Tennessee Department of Environment and Conservation (TDEC) Used Oil Program was given so that messages specifically targeting oil and other automotive products would be included. The supplementary funding supports more air time for stormwater partners, additional announcements, and materials.

**Robert (Bob) English** is a part-time consultant working with the CEE and wearing several hats. Probably his most comfortable role is that of TAMP director. Bob trains "frogloggers" who are assigned routes statewide. Four times a year, they drive their assigned survey routes and listen for frog and toad calls. These volunteers survey frog and toad populations statewide. Our local group is called RAMP (Rutherford Amphibian Monitoring Project). Thanks to Bob, you can check frog and toad calls and get the appropriate amphibian photos on the LEAPS Web site, [www.leaps.ms](http://www.leaps.ms). Bob also assists in the WaterWorks! program as Web site guru and has just completed a number of funded grants to develop a guided tree trail, booklet, and signage for the paved trail at the Barfield Park Wilderness Station. This project leveraged resources from partners as diverse as International Paper, the EPA, and the MTSU Public Service Committee.



In reflection, if you asked the faculty and staff of the center what accomplishment they are most proud of the past couple years, the answers might surprise you. You might think Dr. Kelly would say his recognition by TEEA; Dr. Smith-Walters might say her BAS award; Karen Hargrove might say the \$1.14 million grant; and Dr. Sadler might say her work with teachers and students in the cedar glades. But together they would point out the reinstatement of the Conservation Education Now for Tennessee Students (CENTS) program. This program was a brainchild of Dr. Kelly and several others in the early '80s and grew into a nationally recognized and awarded environmental education program training Tennessee educators in Project Learning Tree, Project WILD and WILD Aquatic, and the CLASS Project. When Dr. Kelly came to MTSU, Dr. Smith-Walters directed the program and was in fact directing it when President George Bush Sr. recognized it at a ceremony in Washington, D.C. Unfortunately, CENTS was cut in the early '90s due to funding and leadership difficulties after both Drs. Kelly and Smith-Walters came to MTSU. Its reinstatement is exciting to all of us at the center!

If you are interested in what the Biology Department's Center for Environmental Education can do for you, or if you want more information on programs and/or materials, feel free to contact us at (615) 217-8575. ●

## Student Research

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\$220 for her study "Effects of aldosterone and aldosterone antagonism on transcription in mouse inner medullary collecting duct cells" (Amy Jetton, advisor).

**Katherine Onks (U)** received a \$1,000 StepMT grant to study *Borrelia burgdorferi* (Lyme) and *Borrelia lonestari* (STARI) establishment in middle Tennessee (Stephen Wright, advisor).

**Vivak Master (U)** received a \$1,000 StepMT grant for his study of surface electromagnetic wave shift using a flow cell to detect antigen-antibody binding in real-time (Stephen Wright, advisor).

**Brad Glorioso (G)** received a \$500 Grant-in-Aid for Research from Sigma Xi, the Scientific Research Society, in 2004 for his work on harvesting effects on survivability of hatchling and yearling turtles (Vince Cobb, advisor).

**Jeff Green (G)** received a 2004 American Society of Ichthyologists and Herpetologists Gage Fund grant of \$700 and a \$1,500 2004 Theodore Roosevelt Memorial grant from the American Museum of Natural History for his research with eastern racers and timber rattlesnakes (Vince Cobb, advisor).

**Jason Hayes (G)** received a \$500 Grant-in-Aid for Research from Sigma Xi, the Scientific Research Society, for his work on isolation of a novel amoebal pathogen (Mary Farone, advisor).

**Erin Hite (U)** received an assistant-level award of \$500 from the CBAS to begin following migration of a novel introduced fescue endophyte (Bruce Cahoon, advisor).

**Christopher Meyer (U)** received an MTSU URSCA Scholar Grant of \$1,785 for his research on *Kalmia latifolia* (mountain laurel), a species native to Pinus pungens forests that contains chemicals known to inhibit seedling growth of other pines (Nicole Welch, advisor).

**Chance Mysaypohn (U)** received a scholar-level award of \$1,300 from the CBAS for his research on fescue chloroplast genome sequencing (Bruce Cahoon, advisor).

**Robert Newby (U)** received an Undergraduate Research Award of \$1,000 for

*continued on p. 21*

## FEATURED FACULTY

**Philip M. Mathis** is the perfect choice for this year's Featured Faculty member. Phil served as editor of *BioUpdate* from 1986 until 2004, when he accepted the position of Interim Dean of the MTSU Honors College. As editor, he wrote wonderful articles and bios of several faculty members and students over the years. This year, it's his turn.

**B**orn and raised in Paducah, Kentucky, Phil grew up learning the importance of working hard. This lesson prepared him for what would become a most impressive academic career, culminating in his receiving the first annual MTSU Foundation Career Achievement Award in 2001 and being appointed dean of the University Honors College.

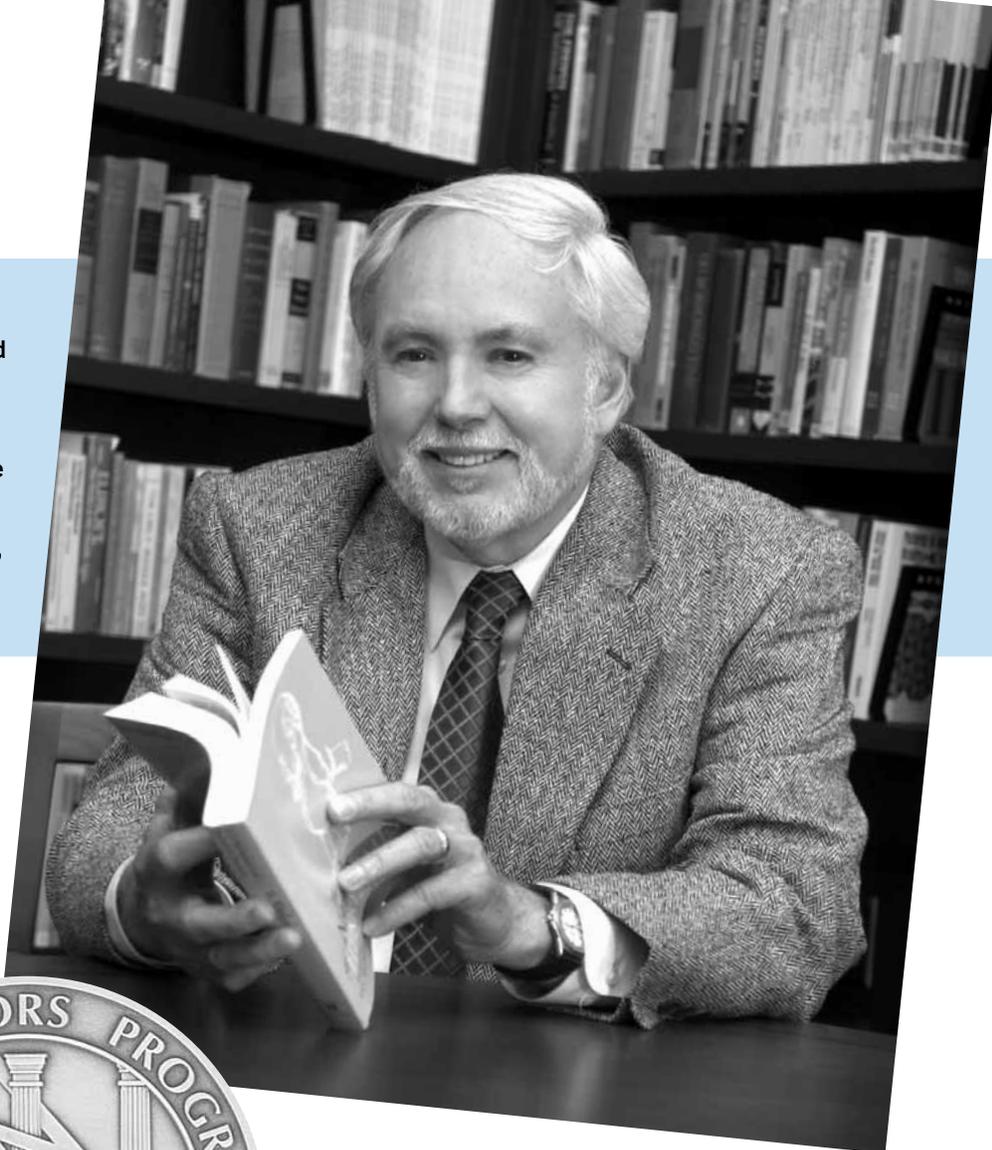
His academic career began with the attainment of his bachelor of science in biology degree from Murray State University in 1964. His first teaching position was in Scott County Schools (Missouri), where his assignments included general biology, advanced biology, chemistry, and physics. He also coached science fair contestants and coordinated the science program 1966–1967. Phil completed his master of science degree in biology at MTSU in 1967. His thesis, *A Comparative Study of the Quadrat, Random Pairs, and Variable-Radius Methods in an Oak-Hickory Stand*, was the first research master's thesis completed in the Biology Department. Little did he know what lay ahead for him and MTSU! Upon completion of his M.S., he was hired as an instructor in the Biology Department. He taught the nonmajor biology course along with general zoology for majors. After spending the 1969–70 academic year at the University of Georgia, Mathis returned to Nashville to complete his specialist in education degree at Peabody College, a program that he had begun



prior to 1969. Upon finishing his Ed.S. in 1971, Phil moved his family to Athens, Georgia, where in two additional years he completed requirements for the doctor of education degree majoring in science education and biology. He and his family returned to the middle Tennessee area in 1973, when he resumed teaching at MTSU as assistant professor in Biology. He has taught numerous students in non-major biology, genetics, Honors genetics, advanced genetics, biometry/biostatistics, and special problems. Appointed to the Graduate Faculty in 1974, he assumed the position of graduate advisor/coordinator in 1980. He continued in this position for the next 21 years. His appointment to the Honors Faculty in 1999 opened the

door to his teaching of the newly established Honors genetics course. In 2004, Phil was appointed interim dean of the University Honors College and, following a national search for a permanent dean, he was asked to remain as dean.

**D**uring his 30-plus years of teaching, Mathis has published more than 50 articles, books, book chapters, and reviews and has received many accolades for his teaching and scholarship. He has received the MTSU Foundation's Outstanding Teacher Award, nine Special Student Commendations, a National Exemplar of Faculty Citizenship Award (American Association of Higher Education), Outstanding Undergraduate Science Teacher Award (national award), and the Tennessee House/Senate Resolution for Outstanding Service to Education. In 1997, Phil received one of his most cherished recognitions. He was commissioned by Governor Paul Patton of Kentucky as a Kentucky Colonel. This very



## **KAN-TUC-KEE**

**Land of sylvan shadow and spectral omen,  
Of foxfire ghosts who lurk in forest moonlight,  
Ushering settlers and brave frontiersmen,  
To mountain gaps and risky westward flight.**

**Hunting ground of the Shawnee and Cherokee,  
Land of narrow footpath and uncharted hill,  
Along the meandering Spay-lay-wi-theepi,  
Where campfires lick the hunting party's kill.**

**Wilderness wonderland of boundless game,  
Realm of spruce grouse, deer, and turkey,  
As yet untouched when the Longhunter came,  
With his firelock, parched corn, and jerky.**

**Fincastle County: wild, free, and untamed,  
Where Kenton met Black Fish and Tecumseh,  
And through a gap Boone's eye first framed,  
The dark and bloody ground – Kan-tuc-kee!**

Philip M. Mathis

special recognition came after publication of one of his wonderful poems, “Kan-tuc-kee.”

Along with his departmental responsibilities, Phil has also been very active in service to the University and to the public. Over the course of his tenure at MTSU, he has been a member of nine committees on program development and promotion and chaired three. He chaired or co-chaired five self-study committees involving the SACS accreditation for MTSU. Phil served in the Faculty Senate on the Senate Steering Committee and the President's Blue Ribbon Committee, and he also was president of the MTSU chapter of AAUP.

As if the above activities were not enough, Phil has made additional contributions by his service to public and professional organizations. He has served as editor of the Society for College Science Teachers publications and the *Science Association of Tennessee Newsletter* and was a section editor for the *Journal of the Tennessee Academy of Science*. He served as chair, facilitator, moderator, or presenter of over 40 presentations at meetings of the National Science Teachers Association, the National Association of Biology Teachers, the American Association of Higher Education, and the Kentucky Academy of Science. Phil served on local arrangements and convention evaluation committees of the Association of Southeastern Biologists, the National Science Teachers Association, the Tennessee Academy of Science, and the Georgia Junior Science Symposium.

**W**hile accomplishing all of the above, Phil has always remained humble and willing to help anyone at anytime. If a job needed to be done, whether in the department or at the university level, Phil would be one of the first to roll up his sleeves and pitch in. Students commented that he was always approachable. They find him easy to talk with and willing to help explain course material during informal office visits. In his tribute to Dr. Fletcher (p. 10), Phil refers to Dr. Fletcher as a “gentleman scholar,” a quality he has tried to emulate. Judging by the comments of his students and colleagues, one would agree that he has successfully emulated his mentor!

Phil and wife Marilyn live in Murfreesboro. They enjoy traveling (when both schedules allow), the outdoors, and shopping for antiques. Phil anticipates retiring within the next couple of years. However, it is difficult to picture him slowing down and taking it easy! They have one daughter, Lori Deal, a physical therapist living in Portland, Oregon, with husband, Tod. On February 18, Lori gave birth to the Mathis' first grandchild, Jacob James Deal. Phil and Marilyn will undoubtedly be piling up frequent-flier miles in the coming years! ●

## In Memoriam

With great sadness the department reports the passing of two former faculty members: Dr. J. Lane Fletcher passed away August 8, 2004, and Dr. Ellis Rucker passed away October 29, 2004. Both men contributed to the development of the Biology Department and were effective teachers. Drs. Fletcher and Rucker will be missed.



**Dr. J. Lane Fletcher**

Dr. Fletcher taught a range of courses including genetics, advanced genetics, speciation, economic biology, histology, and several versions of introductory biology from 1961 to 1981. He also played important service roles within the department. He coordinated the scheduling of courses and teaching assignments and served as graduate advisor/coordinator during a time when that responsibility also included supervision of graduate teaching assistants.

Dr. Philip Mathis recounted his time with Dr. Fletcher, a person for whom he had the deepest respect: "His life and career was the personification of the term 'gentleman scholar.' As a teacher, he was thoughtful, insightful, and absolutely authoritative in his command of subject matter. He had a special gift for distilling a complicated concept into a limited number of understandable points." Mathis added, "As a young teacher, Dr. Fletcher took me under his wing. At first, we shared the teaching duties associated with general genetics. Later, he willingly turned over custody of the entire course to me and was pleased when I was named to succeed him as the departmental graduate advisor/coordinator." Dr. Fletcher set an example by being understanding and kind in his dealings with students and

colleagues alike. Mathis says he has consciously tried to emulate this quality.

Dr. Sarah Barlow remembers Dr. Fletcher: "In graduate school I had the privilege of being in Dr. Fletcher's speciation class. He was an educator of the 'old school,' a gentle man, and an exceptional scholar. Some of my fondest memories are of conversations over lunch with Dr. and Mrs. Fletcher at Wesley Foundation. He was an inspiring teacher and colleague as well as a good friend with a grand sense of humor."

Dr. Charles McGhee remembers Dr. Fletcher as an easygoing, soft-spoken, and mild-mannered fellow: "I don't recall ever hearing him raise his voice much above an audible whisper. In fact, one had to listen rather closely to his conversations. But he made his points both in and out of the classroom. He had both wisdom and experience. His personality was, by all measure, that of a southern gentleman." He was a man of many quips and short stories. Many references were made in admiration both in and out of the classroom to his elegant wife, Elizabeth. To know Elizabeth was to understand Lane. Both liked to comment on some personality trait of the other in jest. He liked to say, "I'm the boss in my house, and I have my wife's permission to say so." Mrs. Fletcher was no doubt his friend and anchor in life. Come to think of it, she may have been the "boss." She is a woman of quiet charm and grace. She never failed to counter Lane's odd lines with a better one of her own. The two of them were, without question, totally devoted to each other. We wish her and her family well."

Dr. Fletcher was an honorable gentleman, an excellent teacher, and never in a hurry to get "there." He, without doubt, fit the mold of professor and philosopher. Following his retirement, Dr. Fletcher remained a loyal friend both to his colleagues and to his students. ●

**"As a teacher, he was thoughtful, insightful, and absolutely authoritative in his command of subject matter. He had a special gift for distilling a complicated concept into a limited number of understandable points."**



### Dr. Ellis Rucker

Dr. Ellis Rucker taught plant biology courses from 1946 to 1979. He was a meteorologist during WWII and could forecast weather conditions, among other scientific talents. He generally tolerated little nonsense, and you always seemed to know when enough was enough.

Dr. Charles McGhee recalls that Dr. Rucker had a special way of advising students. The freshmen who were assigned to Dr. Rucker would look him up in his office on the third floor of the Science Building (now known as WPS). He would politely invite them in and the usual introductions were made. After a bit of the “where are you from” chit-chat, he would ask in his rather soft and dry tone, “Can you read the college catalogue?” “Why, yes sir!” was the obvious answer. “Then read the requirements for graduation,” Dr. Rucker would say. “If you have any questions, come back to see me.”

That, it seems, was the ultimate Rucker advice for completion of a B.S. degree in Biology. An ability to read and follow directions was a priority. This carried over into his classroom as well. His lectures were clear, concise, and outlined to the precise information expected of the student. His labs and lab materials were totally organized, unambiguous, and pointed.

Dr. Rucker was one of Dr. Sarah Barlow’s undergraduate professors during the 1950s. “Those were not pre-historic times but they were pre-Biology Department days” says Barlow. “At that time biology, chemistry, and physics were taught in the Science Department of Middle Tennessee State College. As a teacher of embryology and genetics, Dr. Rucker presented rigorous courses setting high standards for students.”

Dr. Kurt Blum and Dr. Rucker had much in common as Tennessee botanists. The two of them got along quite well. Dr. Rucker’s knowledge of

Tennessee flora was second to none. His knowledge matched or surpassed that of any botanist in the state. It was virtually impossible to find a plant in the area for which he did not know the scientific name and life history. Students were expected to know the scientific names of the local flora for his final Flowering Botany Lab Exam. The course required 100 flowering plants—pressed, preserved, and identified to species. He used the students’ plant collections as the final exam.

Dr. Blum remembers Dr. Rucker as a faculty member from a “different time.” “Dr. Rucker claimed he was an assistant professor his first year here, an associate professor his second year, and a full professor the third.” Some of the recent additions to our faculty may long for the “good old days.”

Some of his former students may remember his discussion of what he called a “crap detector.” Critical thinking was obviously a concept he approached in his own unique way. His seemingly abrupt nature may have hidden the fact that he simply wanted students to think.

Sadly, Dr. Rucker did not part from MTSU on the best of terms. Mandatory retirement at 65 resulted in Dr. Rucker leaving MTSU before he wished to do so. The day he retired, he locked his office door and went home, never to return to the MTSU campus. But this was his true nature—straightforward and upfront, with minimal nonsense.

Dr. Rucker will always be remembered as a student-oriented instructor. Although his dry sense of humor and abrupt nature seemed to point to the contrary, he was always interested in students learning and pushed them to think for themselves. In this, we believe, he was very successful. ●

**It was virtually impossible to find a plant in the area for which he did not know the scientific name and life history.**

## FACULTY News and Happenings

During the past three academic years, the Biology Department faculty has garnered its fair share of awards both from the University and the community. Congratulations to all award recipients.

### 2003–2004

Rebecca Seipelt received the Award for Innovative Excellence in Teaching, Learning, and Technology. Biology faculty recipients of the College of Basic and Applied Sciences Awards for 2003–2004 were Matt Elrod-Erickson, classroom teaching; William Butler, helpful to students; Steve Howard, research; Cindi Smith-Walters, grantsmanship; Kim Sadler, service; Rebecca Seipelt, undergraduate research mentoring; and Amy Jetton, advising.

### 2004–2005

William Butler received the 2005 Harold Love Outstanding Community Service Award on April 14, 2005, from the Tennessee Higher Education Commission. Receiving College of Basic and Applied Sciences awards in 2004 were Matthew Elrod-Erickson, Outstanding Classroom Teacher Award, and Amy Jetton, Outstanding Faculty Advisor Award. At the fall 2004 general faculty meeting, R. Stephen Howard was presented the MTSU Foundation Outstanding Research Award and Nicole Welch was presented the MTSU Foundation Outstanding Achievement in Instructional Technology Award.

### 2005–2006

Rebecca Seipelt received the 2005 Outstanding Achievement in Instructional Technology Award, and Jeffrey Walck received the 2005 MTSU Foundation Outstanding Research Award.



Seipelt



Walck

**George Benz** is associate editor for the *Journal of Parasitology*. George recently coauthored “A Second Species of Arctic Shark: Pacific Sleeper Shark *Somniosus pacificus* from Point Hope, Alaska” published in *Polar Biology* and “Ultrasonic Tracking of Greenland Sharks, *Somniosus microcephalus*, Under Arctic Ice” in *Marine Biology*. He presented an invited, coauthored perspective titled “Infectious Agents and the Liberation of Captive Elasmobranchs,” in a special workshop held at the 2004 annual meeting of the American Elasmobranch Society in Norman, Oklahoma. In the short time he has been at MTSU, George has published five journal articles, one invited book chapter, one proceedings chapter, two invited book reviews, and one invited editorial comment. He has also presented an invited symposium presentation, three invited institution seminars, and one invited university lecture. In collaboration with his former intern, Ash Bullard (Gulf Coast Research Laboratory), Benz taught two (one national, one international), two-day fish health workshops. Benz’s research focuses on shark parasites and shark biology.

**Vince Cobb** is secretary/treasurer for the Southeastern Division of the American Society of Ichthyologists and Herpetologists. He also serves as publications secretary for the Tennessee Herpetological Society. Over the past couple of years, Vince has coauthored five research articles with students in the *Journal of Thermal Biology*, *Southeastern Naturalist*, *Herpetological Review*, *Copeia*, and *Canadian Field-Naturalist*. Also during that time, Vince was coauthor with students on 16 presentations at various scientific meetings: six national, four regional, and six in-state. In 2004, Vince received a three-year research grant (\$75K) from the Tennessee Wildlife Resources Agency to study the status of turtles at Reelfoot Lake, a \$7,889 research grant from the Morris Animal Foundation to study the use of oviductal implants in nesting studies for oviparous snakes, and an MTSU TAF grant (\$115K) for new technology equipment.

**John DuBois** continues his role as advisor to *Scientia*, the student-run e-journal of the College of Basic and

Applied Sciences. He has also assumed the role of editor for *BioUpdate*. John recently reviewed manuscripts for the *Journal of Arid Environments* and the *Brazilian Journal of Plant Physiology*. He participates in the MentorNet project, an online mentoring program for graduate students and postdoctoral candidates in all areas of science. To date, he has mentored two postdoctoral fellows at the University of Wisconsin and Institute of Saskatoon, Canada, and a Ph.D. student at Iowa State University. The MentorNet project is designed to help improve the success rate of women and others who are underrepresented at the doctoral level in the sciences.

**Gore Ervin** coauthored “Prenatal glucocorticoid exposure and adaptation in premature newborn baboons ventilated for six days” in the November 2004 issue of *American Journal of Obstetrics and Gynecology*.

**Anthony Farone** was promoted to full professor in fall 2005. Tony and **Mary Farone**, along with colleagues, published “The Reoviridae” in *The Mouse in Biomedical Research* and “Detecting Mold Spores in School Buildings: An Exercise in Biodiversity” in *American Biology Teacher*. The Farones made two presentations at the 2004 meeting of the American Society for Microbiology, three 2004 Scholar’s Day presentations at MTSU, and four presentations at the Kentucky/Tennessee section of the American Society for Microbiology and Tennessee Academy of Science meetings. Tony and Mary, along with faculty from Tennessee Technological University, received \$200K for their research in isolating bacteria that cause Legionnaire’s Disease. Tony and Mary are the proud parents of Dominick, born October 11, 2005.

**Thomas Hemmerly**, accompanied by his grandson, MTSU student Andy Roadarmel, attended the jointly held 9th Congress of Ethnobotany, the 45th annual meeting of the Society for Economic Botany, and the 8th International Congress of Ethnopharmacology at the University of Kent, Canterbury, UK, in June 2004. At the meeting, Tom presented a paper coauthored with **David Palmer** (M.S.



'04) titled "The Plant Nursery in Warren County, Tennessee, USA, 1887-1950" and a poster coauthored with **Kristel**

**Young** (M.S. '05) and **Phil Mathis** titled

"Antibiotic and Allelopathic Effects of Leaf Extracts from the Olive Tree *Olea europaea* (Olaceae)." Tom served as technical editor of *Wildflowers of Tennessee, the Ohio Valley, and the Southern Appalachians*, the official guide of the Tennessee Native Plant Society, released in 2005 by Lone Pine Press, Auburn, Washington. Other contributors with MTSU connections include **Mary Priestley** (M.S. '88), **Landon McKinney** (M.S. '77), **Kevin Fitch**, **Bertha Chrietzberg** (M.Ed. '68), and **Betty McNeely**.

**Steve Howard** was promoted to full professor in fall 2004. Steve coauthored three papers: "Mutation Accumulation in Growing Asexual Lineages," "Opposites Attract? Mate Choice for Parasite Evasion and the Evolutionary Stability of Sex," and "The Ratchet and the Red Queen: The Maintenance of Sex in Parasites."

**Sandra Johnson** was promoted to associate professor and granted tenure in fall 2004. On October 22, 2003, Sandra presented "Visual Library of Images for Organisms" at the 2003 MTSU Instructional Technology Share Fair.

**Padgett Kelly** presented "The Cultural and Ecological History of the Valley Isle" at the National Marine Educator's International Conference July 19, 2004, at Eckerd College in St. Petersburg, Florida. Padgett received a Distinguished Service Award from the Tennessee Environment Education Association on September 17, 2005. He works closely with the Tennessee Math, Science, and Technology Education Center at MTSU. This past year, Padgett was a corecipient of a \$122,600 grant to conduct teacher math and science training in Hardeman County. However, Dr. Kelly's strong suit continues to be work-

ing with school groups. He conducts a biome analysis course in the Florida Keys, has conducted whale watching sessions in Hawaii, and offers other class related field trips and in-services and often takes his traveling "lifesize whale" program throughout Tennessee and into surrounding states.

**Matt Klukowski** presented the paper "Seasonal changes in abundance of chiggers and infestations on fence lizards, *Sceloporus undulatus*" at the 2004 National Meeting of Ichthyologists and Herpetologists in Norman, Oklahoma. That same paper was published in 2004 in the *Journal of Herpetology* (38:141-144) with the title "Seasonal changes in environmental abundance of host-seeking chiggers (Acari: Trombiculidae) and infestations on fence lizards, *Sceloporus undulatus*." Matt also coauthored "Testosterone and daily activity period in laboratory housed mountain spiny lizards, *Sceloporus jarrovi*" published in the *Journal of Herpetology* (38:120-124). Matt was promoted to associate professor and granted tenure in fall 2004.

**Jeff LeBlond** was promoted to associate professor and granted tenure in fall 2005.

**Amy Massengill** and her husband, Eric, are the proud parents of Ashleigh Elizabeth, born April 28, 2005.

**Charles McGhee**, along with graduate student Tracey Ludyjan-Ybarra, presented "New and Previously Reported Ixodid Ticks of Rutherford County, Tennessee" at the 2004 annual meeting of the Tennessee Academy of Science (TAS). He presented "The Morphology and Taxonomic Status of *Leiobunum serratalpe* Roewer (1910): (Arachnida: Phalangida: Leiobuninae)" at the 2005 annual meeting of the TAS, along with a paper coauthored by student Glenn Rohrbach. McGhee continued to inform both the public and scientific community on evolution with his 2003 presentations to the TAS of "Evolutionary Ideas Before and After Darwin" and "History and Progress of Evolu-

tionary Thought in Science" and his October 2005 article in MTSU's Today's Response media outlet, "Not-So-Intelligent Design," in response to the Pennsylvania lawsuit regarding the teaching of evolution and "intelligent design" in public schools.

**Brian Miller** copresented "Identification, Habitat, and Distribution of the Tennessee Cave Salamander, *Gyrinophilus pallescens*, in Tennessee" at the 2004 annual meeting of the Tennessee Cave Survey, along with two papers at the 2004 annual meeting of the Tennessee Herpetological Society.

**Jerry Reagan**, who joined the biology faculty in fall 2005, published a paper titled "Silencing of the Mutant SCAP Allele Accounts for Restoration of a Normal Phenotype in CT60 Cells Selected for NPC1 Expression" in the July 2005 issue of the *Journal of Lipid Research*.

**Wayne Rosing** presented "Fungi, Friends or Foes?" at the Murfreesboro Discovery House on August 12, 2003. He recently had three publications: "Myxomycetes of Cedars of Lebanon State Park, Wilson County, Tennessee" in *Castanea*, "The Dangers of Household Molds" in the *Tennessee Conservationist*, and "Myxomycetes of the Radnor Lake State Natural Area, Davidson County, Tennessee" in *Castanea*.

**Kim Cleary Sadler** was selected to serve on the *Journal of College Science Teaching* publication review board. Kim copresented "College Professors Serve as Science Mentors for Pre-Service Elementary Teacher Candidates" at the International Conference for the Association of the Education of Science Teachers, January 21, 2005, in Colorado Springs, Colorado. She continues to work with various groups through the Center for Environmental Education (CEE) despite her heavy teaching load. Her passion continues to be teaching microscope workshops for all ages, working with area educators in developing native habitat on school grounds, informal education projects on the Greenway, and providing informa-

*continued*

tion on cedar glades. She is the center's unofficial assistant director and sits on several boards including Friends of the Greenway and the Stones River Watershed Association. Kim has also represented the CEE at several national and international conferences and has published a number of papers, some in partnership with Dr. Smith-Walters on various aspects of using the outdoors as a classroom. She was selected for the College of Basic and Applied Sciences 2004–2005 Outstanding Public Service Award and was nominated for the MTSU Foundation's 2005 Public Service Award. Kim also serves as codirector for the Center for Cedar Glade Studies.

**Judith Shardo** is continuing research on morphological development and evolution of teleost fishes. In 2004, she coauthored a paper, "Development, Growth, and Yolk Utilization of Hatchery-Reared Red Snapper (*Lutjanus campechanus*)" published in *Marine Ecology Progress Series* and presented "Variation in Early Neuromasts of Teleost Fishes" at the fall meeting of the Tennessee Academy of Science. Shardo presented "Neurulation in Teleost Fishes: A Derived Character" and chaired the ichthyology session at the spring 2005 meeting of the Association of Southeastern Biologists.

**Rebecca Seipelt** was granted tenure beginning fall 2004 and was promoted to associate professor in fall 2005. Rebecca copresented "Getting to Know the Human Genome" at the 2003 MTSU Instructional Technology Share Fair. She coauthored "Proteasome Inhibition Alters the Transcription of Multiple Yeast Genes" in *Biochimica et Biophysica Acta*. Along with Stephen Wright, Becky received \$100K through U.S. Congressman Bart Gordon for the renovation of a biotech classroom. She and husband Michael Thompson are the proud parents of Laurel Grace, born June 3, 2005.

**Cindi Smith-Walters** serves as a reviewer for the *Nab the Aquatic Invader! Be a Sea Grant Super Sleuth* Web site and was the 2004–2005 chair of the college science teaching advisory board. In 2004, she was appointed to the steering committee for Project WILD (Wildlife in Learning Design), an inter-

national education program focusing on wildlife. The appointment runs for two years. As codirector of the MTSU Center for Environmental Education (CEE), she directs grants and contracts; applies for new sources of funding; and presents CEE programs to local, regional, national, and international audiences. In addition to receiving recognition for Outstanding Grantsmanship in 2004–2005 from the College of Basic and Applied Sciences, she and **Dr. Kim Sadler** gave papers and/or conducted workshops for groups such as the National Science Teachers Association (NSTA), the National Association of Biology Teachers (NABT), and the North American Association for Environmental Education (NAAEE). This past year, Cindi has continued to serve as chairperson for the editorial board of the *Journal of College Science Teaching* and as the Education Committee chair for the Tennessee Academy of Science. She is also part of Governor Bredesen's Keep Tennessee Beautiful Advisory Council.

**William Stewart** was promoted to full professor in fall 2005. Bill coauthored "Five Activators Can Replace the Requirement of FBS in the Adipogenesis of 3T3-L1 Cells" in *Biochemical and Biophysical Research Communications*.

**Michael Thompson**, along with **Rebecca Seipelt** and student **Carrie Romer**, presented "Two Conserved Tyrosine Residues Are Essential for the Peptidase Activity of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase" at the 2005 Experimental Biology meeting in San Diego, California.

**Jeffrey Walck** was an invited presenter at the International Seed Workshop in May 2005 held in Brisbane, Australia. He gave presentations over the past year for the Philadelphia Botanical Club at the Academy of Natural Sciences and for Shorter College. At annual meetings of the Botanical

Society of America in Austin, Texas, and the Association of Southeastern Biologists in Florence, Alabama, he coauthored seven presentations with graduate students and his wife, Siti. Jeff had papers published in *Castanea*, *Seed Science Research*, *Canadian Journal of Botany*, *Annals of Botany*, *Journal of the Tennessee Academy of Science*, and *Sida* and a book review in *Plant Science Bulletin*. He received the 2005 Distinguished Research Award from MTSU. Jeff was promoted to associate professor and granted tenure in fall 2004. He serves on the editorial board of *Castanea* and the *Journal of the Southern Appalachian Botanical Society*. Jeff and Warren Anderson from Agribusiness/Agri-science, along with the Stones River National Battlefield, received a Cooperative Conservation Grant (\$46,505) to investigate the eradication of the exotic species Chinese yam and restore habitats in the Stones River Watershed. Jeff made two invited presentations at the International Seed Workshop in Brisbane, Australia, in May 2005. He presented two papers at the Botanical Society of America's 2005 meeting in Austin, Texas, in August, where he also chaired the session on seed production and germination.

**Nicole Welch** and her students are studying the Table Mountain Pine (*Pinus pungens*) forests of the Great Smoky Mountains National Park and Cherokee National Forest. Specifically, they are investigating the fire ecology and population dynamics of the species and the effects of mountain laurel on the inhibition of pine seed germination. She and her husband, Mark, are the proud parents of Gordon Turrill, born June 8, 2005.

**John Zamora** coauthored six student presentations at the Tennessee Academy of Science annual meetings (2004, 2005) and two presentations at the American Society for Microbiology National Meetings in New Orleans May 2004 and in Atlanta in June 2005. John chaired the microbiology section of the Tennessee Academy of Science in 2005. Since coming to MTSU, John has mentored 21 graduate students who have graduated with the master's degree with thesis! ●



# Graduate Teaching Assistants for 2005-2006

**F**or the 2005-2006 academic year, the department supports 29 graduate students who serve as graduate assistants or teaching assistants. About one-half (15) of these have undergraduate degrees from colleges and universities other than MTSU (one from Tianjin Normal University in China). Three hold baccalaureate degrees in subjects other than biology (wildlife and fisheries science, biomedical science, and math). All have the requisite training. Departmental assistants are assigned to individual faculty members or the biology department office. Each year the quality of our graduate assistants seems to get better, and this year is no exception.

**David Adams**, B.S. in biology, Tennessee Technological University  
**Brianne Begley**, B.S. in biology, Middle Tennessee State University  
**Stanton Belford**, B.S. in biology, Martin Methodist College  
**Crystal Bishop**, B.S. in wildlife and

fisheries science, Tennessee Technological University  
**Rebecca Davis**, B.S. in biology, Middle Tennessee State University  
**Brad Glorioso**, B.S. in biology, Southeastern Louisiana University  
**Dai Gu**, B.S. in Biology, Tianjin Normal University  
**Heather Hensley**, B.S. in biology, Middle Tennessee State University  
**John Jackson**, B.S. in biology, Middle Tennessee State University  
**Bryan King**, B.S. in biology, Lamouth University  
**Sheri Mersch**, B.S. in biomedical science, Western Michigan University  
**Andrew McElwain**, B.S. in biology, Westfield State College  
**Brandon Naquin**, B.S. in biology, Middle Tennessee State University  
**Christina Nicholas**, B.S. in biology, Middle Tennessee State University  
**Matthew Niemiller**, B.S. in biology, Middle Tennessee State University  
**Christina Nelson**, B.S. in biology, University of the South

**Jason Palmer**, B.S. in biology, Middle Tennessee State University  
**Randi Paschall**, B.S. in biology, University of Kentucky  
**Julie Phillips**, B.S. in mathematics, Middle Tennessee State University  
**Elizabeth Reed**, B.S. in biology, Middle Tennessee State University  
**Randi Timmons**, B.S. in biology, Lincoln Memorial University  
**John Todd**, B.S. in biology, Middle Tennessee State University  
**Amy Tolley**, B.S. in biology, Bethel College  
**Christopher Williams**, B.S. in biology, Eastern Kentucky University  
**Victoria Woodyard**, B.S. in biological science, University of Missouri  
**Tim Worrall**, B.S. in biology, Middle Tennessee State University  
**Adam Wright**, B.S. in biology, Tennessee Technological University  
**George Richie Wyckoff**, B.S. in biology, Middle Tennessee State University  
**Elizabeth Young**, B.S. in biology, Middle Tennessee State University ●

## Beta Beta Beta, Kappa Delta Chapter



The Kappa Delta Chapter of Beta Beta Beta (Tri Beta) National Biological Honor Society is thriving! The officers for 2005-2006, Kara Laine (president), Sweeti Bhakta (vice president), Wendy Webster (secretary), James Borton (secretary), Whitney Humphrey (publicist), and Marsha Wallace (historian), lead an enthusiastic group of 30 members. Membership is open to all undergraduate and graduate biology majors, including preprofessional majors, with an overall GPA of 2.75 or higher and at least a 3.0 GPA in a minimum of eight hours of biology courses. Drs. Nicole Turrill Welch and Judith Shardo coadvise Tri Beta.

## Undergraduate Research Success

Many Tri Beta members participate in undergraduate research with Biology Department faculty members and want to inform other students of the benefits of their experiences. A brochure on undergraduate research opportunities, complete with tips on how to approach faculty members about working in their labs, courses that should be completed before beginning research projects, and where to find funding for research projects is being developed. Members also hope to raise funds to establish competitive Beta Beta Beta research grants.

## Beta Beta Beta Seminar Series

Each semester since fall 2003, Tri Beta has hosted a seminar series that invites biologists to share their research and advice. This monthly series has welcomed biologists from the University of Tennessee, the University of California-Davis, the University of Kentucky, Miami University, Vanderbilt University, and Marshall University. Tri Beta thanks the Biology Department and

MTSU Office of Student Organizations for supporting the series.

Seminars for the 2005-06 academic year were

- "Feeding Mimicry Drives the Evolution of Extreme Trophic Adaptations in Vertebrates," Randall S. Reiserer, Vanderbilt University (September 22, 2005)
- "Restoration Strategies to Improve Soil Quality for Degraded Agroecosystems in Indonesia," Iin P. Handayani, Visiting Fulbright Scholar, University of Bengkulu, Indonesia (October 20, 2005)
- "Transforming Growth Factor Beta Signaling in Cardiovascular Development," Joey V. Barnett, Vanderbilt University (November 10, 2005)

Contact Dr. Nicole Turrill Welch at 898-5372 or [nwelch@mtsu.edu](mailto:nwelch@mtsu.edu) for more information on dates, times, and locations of seminars for the upcoming year. ●

# ALUMNI Making Their Mark

**Cynthia Allen** (B.S. '98) joined MTSU as secretary for the Center for Environmental Education (CEE). She has seven years experience in the environmental field including consulting and laboratory analysis, primarily for the treatment of groundwater. Since water quality and aquatic life is of special interest, she is enthusiastic about her new role with WaterWorks! and hopes to participate in a number of community outreach programs. Cynthia enjoys outdoor activities including gardening, hiking, fishing, and the new sport of geocaching.

**Kate Barksdale** (B.S. '02) is a research assistant at Vanderbilt University in Nashville.

**Chad Brooks** (M.S. '99) completed his Ph.D. in microbiology at the University of Oklahoma and has accepted a position as assistant professor in the APSU Department of Biology. Chad and wife Lisa have a new baby boy, Max.

**Horton Brumlow** (B.S. '80) is a pathologist's assistant at the Erlanger Medical Center in Chattanooga. His responsibilities include gross dissection of surgical specimens and autopsies.

**W. Bart Bryant** (B.S. '02) is in the Ph.D. program at Kansas State University studying Sindbis virus.

**Mandy Carter-Lowe** (M.S. '99) is a biology instructor at Columbia State Community College. She is also the biology coordinator.

**Nicholas Chim** (B.S. '96) completed his Ph.D. at Vanderbilt University and is a postdoctoral fellow at UCLA.

**Joe Christison** (B.S. '01) is in the Ph.D. program in developmental biology at the University of Oregon.

**Regina Courtney** (M.S. '97) is lab manager in the Zheng lab at Vanderbilt-Ingram Cancer Center.

**Jeremy Dahmen** (B.S. '03, M.S. '05) is working on a Ph.D. in molecular plant sciences at the Institute of Biological Chemistry at Washington State University.

**Reshma Desai** (M.S. '97) has accepted a position as a research assistant at Merck and Co. Inc.

**Spence Dowlen** (M.S. '02) is a biology instructor at Columbia State Community College.

**Jeff Fisher** (M.S. '00) has taken a position at ICON in Nashville.

**Richard Fleming** (B.S. '76) is senior central nervous system specialty representative with Pfizer Inc., representing their psychotropic pharmaceuticals. In February 2004, Richard was inducted into the Pfizer Masters, which represents tenure and exemplary service. He has won numerous sales awards including District Sales Representative of the Year and the Vice President's Cabinet Award. Richard and wife Donna Jo have eight children and five grandchildren and reside near Birmingham, Alabama.

**Gary Gerald** (M.S. '03) is working toward his Ph.D. in zoology at Miami University in Oxford, Ohio. In his third year under advisor Dennis Claussen, Gary is researching life history trade-offs in snakes pertaining to locomotion in different habitats.

**Jason Hayes** (B.S. '03, M.S. '05) is working on his Ph.D. in microbiology at Miami University in Oxford, Ohio.

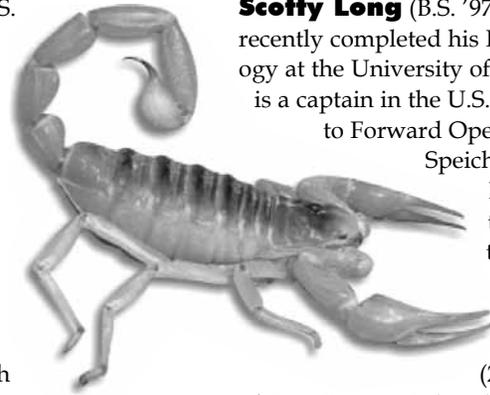
**Karen Kendall-Fite** (M.S. '93) is an assistant professor of biology at Columbia State Community College.

**John W. Lamb** (B.S. '94, M.S. '01) is the conservation biologist at Arnold Air Force Base near Tullahoma.

**Jared LeBoeuf** (M.S. '03) is a research associate in the Cardiovascular Medicine Division at Vanderbilt University.

**Erin Lewis** (B.S. '99) received her M.D. from the medical school at East Tennessee State University. Erin is in her residency in Immunology at UTM.

**Scotty Long** (B.S. '97; M.S. '99) recently completed his Ph.D. in entomology at the University of Florida. Scotty is a captain in the U.S. Army deployed to Forward Operating Base Speicher, Tikrit, Iraq. He is the executive officer/military entomologist in a preventive medicine detachment (223rd) based out of Fort Carson, Colorado.



**Melinda Beckman Mallette** (B.S. '00) received her M.D. from the medical school at the University of Tennessee at Memphis. She is in her residency in the Pediatrics Department at UTM.

**Laura Jennings McCall** (M.S. '04) was hired by the MTSU Center for Environmental Education (CEE) as the new outreach coordinator. She serves as a solid waste, recycling, reuse, and vermicomposting educator as well as the center's liaison to the general public. It is said that Laura "talks trash" with anyone. Her primary role at the CEE is as middle Tennessee representative of the Tennessee Solid Waste Education Program (TnSWEP). Laura conducts programs and workshops stressing the importance of reducing, reusing, recycling, green shopping, and other issues of sustainability. Laura is a TAMP volunteer and recently participated in TWRA's Bear Hollow BioBlitz.

**Mindy Miller** (B.S. '00) is working on her Ph.D. in microbiology at the University of Tennessee-Knoxville.

# Biotechnology Resource Group Trains Students and Teachers

**Anton Mitsky** (B.S. '00) is working on his Ph.D. in molecular botany at the University of Tennessee-Knoxville.

**Sean O'Donnell** (B.S. '97) completed his Ph.D. at Miami University in Oxford, Ohio, and is now training in pathology at the Bethesda campus of the NIH.

**Jason Palmer** (B.S. '04) spent the summer and fall of 2004 as an intern at Disney World.

**Lori Sain Smith** (B.S. '94) has been vice president of retail at Reeves-Sain Drug Store in Murfreesboro since 1997. She was recently named vice president of public relations and marketing at Reeves-Sain. She, husband **James Smith** (B.S. '94), and their son, Jacob, live in Murfreesboro.

**Witold Skolasinski** (B.S. '02, M.S. '04) is studying proteomics in the Ph.D. program at the University of Greifswald, Germany.

**Christopher Smith** (B.S. '98) earned a Doctor of Dental Surgery (D.D.S.) degree in May 2003 from the University of Tennessee-Memphis College of Dentistry. He and wife **Supakanya** (M.B.A. '95, M.A. '98) live in Clarksville with their daughter, Resa. Chris is an associate dentist in Clarksville.

**Jeremy Spiess** (B.S. '01, M.S. '04) is working for Environmental Services Inc. in Destin, Florida. Environmental Services is a private consulting firm specializing in environmental assessment, RTE surveys, wetland delineation, and irrigation permits.

**Amanda Wagner** (B.S. '01) received her M.D. from the American University of the Caribbean and is in her psychiatry residency at Johns Hopkins University.

**Richie Wyckoff** (B.S. '03) is the wildlife ecologist at Arnold Air Force Base near Tullahoma. ●

**T**he Biotech Resource Group (BRG) has had a busy couple of years with high school teacher training, internship students, research students, and curriculum development. Since fall 2003, over 30 area high school teachers have taken advantage of biotechnology training opportunities such as the workshop given at the joint meeting of the TAS/TSTA November 13–15, 2003, and the summer biotechnology workshop held June 24–26, 2004. Of the 30-plus participating teachers, five now routinely perform biotechnology-related exercises in their classrooms using equipment and supplies from the BRG.

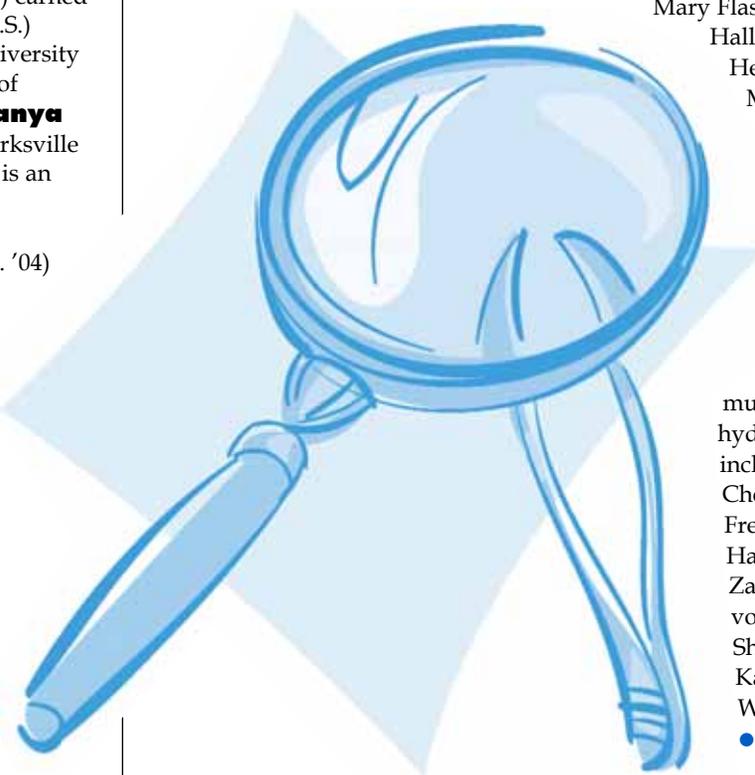
In addition to working with high school teachers to promote biotechnology, the BRG has enhanced the real-world experiences of biology undergraduate and graduate students by providing internship opportunities. The BRG sponsored 20 internships at local biotechnology-related companies or agencies, which include the Tennessee Bureau of Investigation, Orchid Cell-

mark, Cumberland Swan, BioVentures, the Vanderbilt Genetic Counseling Facility, and Grassmere Zoo. Internship students gain real-world experience while earning credit for their efforts (BIOL 3200 or BIOL 6500). The students participating in the internship program, along with the locations of the internships, are listed on p. 27

While several students gained valuable work experience in industry, others have gained valuable experience in performing scientific research. Carrie Romer investigated kinetic characteristics of wildtype yeast leukotriene A4 hydrolase. Rodney Kincaid examined the evolutionary relationships between human aminopeptidases. Erin Archer determined kinetic characteristics of a mutant yeast leukotriene A4 hydrolase.

Students working on projects to clone human aminopeptidase genes from a DNA library include Walt Bell, Caroline Bishop, Chelsea Bond, Michael Chamberlain, Shelby Clark, Lindsey Crim, Julie Cruzen, Michelle Drury, Mary Flaschner, Justin Gentile, Richard Hall, Britton Hardison, Keri Henley, Tonya Kuhn, Cailin McGlory, Jonathon McPherson, Nicole Norment, Alexandra Oneyejiaka, Paula Owens, Valerie Rollins, John Shenouda, Michelle Vandergriff, and Fenesia Whitney.

Several students have been busy attempting to generate site-directed mutants of yeast leukotriene A4 hydrolase. These investigators include Ann Bolger, Maggie Chewing, Mary Graves, Summer Freeman, Matte Haley, Victoria Harcy, Zach Ingle, Jeff Lamb, Zan McCormick, Alex Mitthivong, Megan Reese, Ashley Shannon, DeBorah Stephens, Karen Williams, Jennifer Wiltfong, and Daniel Wynne.



## Biology Club

### BioUpdate Gets a New Editor

Phil Mathis edited *BioUpdate* from 1986 to 2004. However, his move to the Honors College necessitated stepping down from this position. As editor, Phil informed and entertained us with his unique writing style. Several faculty and staff have commented that Phil was exceptional when it came to lavishing praise upon colleagues, students, and alumni. The Biology Department wishes him all the best in his new position. We will surely miss reading his articles and tributes. I have assumed the editor role. Personally, I missed reading *BioUpdate* in spring 2005. I believe that it is important to stay in contact with students, alumni, and friends. I realize that becoming editor is challenging enough, but having to follow Phil in that role adds an additional challenge! I look forward to working with the faculty and staff to help keep all of you informed about our activities. Please keep us informed about what you are doing. The real success of *BioUpdate* has been the submissions by faculty, staff, students, and alumni. You may send items to me directly at [jjdubois@mtsu.edu](mailto:jjdubois@mtsu.edu). Because there was no issue in 2005, this *BioUpdate* will attempt to cover departmental activities and news for the past two academic years.

**John DuBois**

#### Officers for 2005-2006

President: John Shenouda  
Vice President: Brittany Dove  
Secretary/Treasurer: Will Isom  
Activities Coordinator: Brittney Bates

**F**all 2005 activities of the Biology Club included a camping trip along with meetings at the bowling alley and La Siesta Mexican Restaurant. Former club members check in from time to time to report on their activities after leaving MTSU. Those recently reporting were

**Rebecca McWhirter** is working at Vanderbilt University in microbiology.

**Kimber Logan-Dunn** is attending physician's assistant school at Trevecca Nazarene University.

**Greg Finney** is an environmental specialist working for the state of Tennessee.

Members of the Biology Club continued their tradition of participation at local, regional, and national scientific meetings. Student presentations over the past two years included

**Kimber Logan-Dunn** and John M. Zamora. "Isolation and Identification of Lipase-Producing Microorganisms." American Society for Microbiology National Meeting, New Orleans, La. May 2004 (oral presentation).

**Jerry L. Trageser** and John M. Zamora. "The Isolation and Identification of Diazinon-Degrading Bacteria." American Society for Microbiology National Meeting, Atlanta, Ga. June 2005 (oral presentation).

**Elizabeth G. Reed** and John M. Zamora. "Evaluation of the Bacterial Levels of the Stones River and J. Percy Priest Lake." Tennessee Academy of Science Meeting, November 2004 (poster).

**Allison Cummings** and John M. Zamora. "The Herbicide Roundup™ Has an Inhibitory Effect on Microorganisms." Tennessee Academy of Science Meeting, November 2004 (poster).

**Daniel P. Lawrence** and John M. Zamora. "The Evaluation of Selected Teas for Antiviral Activity Using the T4 Bacteriophage Neutralization Assay." Tennessee Academy of Science Meeting, November 2004 (oral presentation).

**Stacie N. Jefferson** and John M. Zamora. "Allelopathic and Antimicrobial Properties of *Tabebuia Impetiginosa*." Tennessee Academy of Science Meeting, November 2004 (oral presentation).

**Christina L. Nelson** and John M. Zamora. "Allelopathic and Antimicrobial Properties of the Ayurvedic Herbs *Neem* and *Gotu Kola*." Tennessee Academy of Science Meeting, November 2005 (poster).

**Brandon Naquin** and John M. Zamora. "The Isolation and Identification of Antimicrobial-Producing Organisms." Tennessee Academy of Science Meeting, November 2005 (poster).. ●



**S**cientia: The Journal of Student Research, sponsored by the College of Basic and Applied Sciences, continues its publication of student research from across the MTSU campus. Students in the Biology Department were once again well represented, both in presentations at the MTSU research symposia and in full-length research articles. John DuBois is faculty advisor to *Scientia* and Dennis Mullen is the department faculty representative. Biology Department representatives on the student editorial board were

Katie McClure, student representative (2004–2005)

Erin Archer, student representative (2005–2006)

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**Abstracts of papers presented at the annual Undergraduate Research Symposium, April 16, 2004**

John R. Ayers and Dennis Mullen, "The Effect of Tims Ford Dam on Fish Diversity in the Tributary Streams to the Reservoir"

Sarah Hayes, Wesley Skelton, Elliott Tenpenny, Jill Danford, Alex Winfrey, Rebecca Seipelt, and Matt Elrod-Erickson, "Characterization of Genes Involved in Cytokinesis from Baker's Yeast"

Allison Cummings and John M. Zamora, "The Herbicide Roundup™ Has an Inhibitory Effect on Microorganisms"

Meghan Davis and Philip Mathis, "Longevity in Female *Drosophila melanogaster* in Relation to Acp62F Protein Exposure and Male or Female Companionship"

Meghan Davis and Rebecca Seipelt, "Using Mm Kin17 Gene to Shift a B Cell pattern to a Plasma Cell Pattern"

Daniel C. Dorset and Stephen Wright, "Fluorescence-Based Detection of Digoxigenin-Labeled DNA Bound to an Oligonucleotide Probe on a Glass Substrate"

Adam Farmer, William Robertson, Stephen Wright, and Andrienne Friedli, "Design, Assembly, and Initial Testing of the PBG-Based Biosensor"

Teresa Fernstaedt, Martha Peterson, and Rebecca Seipelt, "Cleavage Factor I Regulation of RNA Processing Patterns"

Amanda Fortune, Martha Peterson, and Rebecca Seipelt, "RBPMS May Function in Development of Plasma Cells"

Loreli Garnica, Martha Peterson, and Rebecca Seipelt, "Analysis of Plasma Cell Behavior in Mouse B Cells Expressing C21ORF66"

Rebecca Jones and A. Bruce Cahoon, "Detection of a Fungal Endophyte in Tall Fescue"

Michael Korte, Martha Peterson, and Rebecca Seipelt, "Slu7 May Be Involved in the Transition of B Cells to Plasma Cells"

Michael D. Krisle and Jeffrey L. Walck, "Morphological Differences between *Oxalis dillenii* and *O. stricta* (Oxalidaceae) in Middle Tennessee"

Kathryn Lindsey, Martha Peterson, and Rebecca Seipelt, "Survival Motor Neuron (SMN), a Cause of Spinal Muscular Atrophy, May Also Function in B Cell Differentiation"

M. Lane Thomas and Mary B. Farone, "The Characterization of Antibiotic Sensitivity and Enterotoxigenic Potential of a *Staphylococcus intermedius* Pyoderma Isolate"

Nathan Wyeth and Mary B. Farone, "The Isolation, Enumeration, and Identification of Fecal Coliforms from Guacamole"

Katie Onks, Rodney Kincaid, Emily Wolfe, Rebecca Seipelt, and Phillip Mathis, "Genetically-Based Tasting Abilities Do Not Influence Food Preference or Smoking Behavior"

Elizabeth G. Reed and John M. Zamora, "Evaluation of the Bacterial Levels of the Stones River and J. Percy Priest Lake"

Lydia Turner, Martha Peterson, and Rebecca Seipelt, "A Liposarcoma Gene, Fus, May Be Involved in Plasma Cell Development"

Alex Winfrey, Martha Peterson, and Rebecca Seipelt, "Characterization of FUSIP Action in B Cell Development"

Wesley Skelton, Jessica G. Gentry, and Mary B. Farone, "The Isolation and Identification of *Escherichia coli* Strains Responsible for Calhoo Scours"

Nicholas S. Zeger and John M. Zamora, "Antimicrobial Properties of *Humulus lupulus*"

Christin Tinkle and Stephen Wright, "Fluorescence-Based Detection of Biomolecules Bound to Glass Substrates"

**Abstracts of papers presented at the annual Graduate Research Symposium, April 20, 2004**

Justin B. Anderson, Martha L. Peterson, and Rebecca L. Seipelt, "B Cell Transformation to a Plasma Cell Due to Actions of the Gene TBPIP"

Elizabeth A. Fitch, Jeffrey L. Walck, and Siti N. Hidayati, "Seed Germination of Two Rare *Lesquerella* Species (Brassicaceae), with Management Implications"

Juliana W. Kyzar, "Evaluation of Benthic Macroinvertebrate Metrics as Indicators of Human Impacts on Bedrock Streams in Tennessee's Inner Nashville Basin (Subcoregion 71)"

continued on p. 27

# TAMPing Around Tennessee...

by Cynthia Allen and Cindi Smith-Walters

**"E**ye of Newt and Toe of Frog may one day be gone from witch's grog." This lighthearted statement is really a wake-up call for those concerned about our environment. A 2004 study by the World Conservation Union published in the journal *Science* emphasizes the need for close monitoring of amphibians such as toads and frogs worldwide. The report points to "completely unprecedented declines and extinctions of amphibians that are outside normal experience." There are a variety of reasons for these losses, some of which are still unexplained.

Amphibians have porous skins and narrow environmental requirements and because they undergo a complete metamorphosis (changing body type, food, habitat requirements, and more) their decline may be an indication that something sinister is underway in the environment. Researchers report that a whopping 32.5% of known species of amphibians are "globally threatened," meaning they fall into the International Union for the Conservation of Nature's categories of vulnerable endangered or critically endangered. It is believed that 435 species are considered to be in rapid decline and at least nine have become extinct in the last 15 years. Another 113 species have not been reported from the wild in the past few years and are considered to be possibly extinct. These findings are found within the Global Amphibian Assessment and were compiled by more than 500 scientists in 60 countries.

## What does that have to do with MTSU and Tennessee?

In 2004, the Tennessee Amphibian Monitoring Program (TAMP) was restructured as a partnership between the MTSU Biology Department Center for Environmental Education (CEE) and

the Tennessee Wildlife Resource Agency (TWRA). TAMP trains volunteers to survey areas for the 21 species of frog and toad populations known to reside in Tennessee. With the information gathered from TAMP, the CEE hopes to better understand the populations, distribution, and relative abundance of each species.

Using a protocol developed by the North American Amphibian Monitoring Program (NAAMP), four times a year volunteer "frogloggers" drive specified routes and both listen to and record the calls of the amphibians. These baseline data include both distribution and breeding population information and are then shared with and integrated

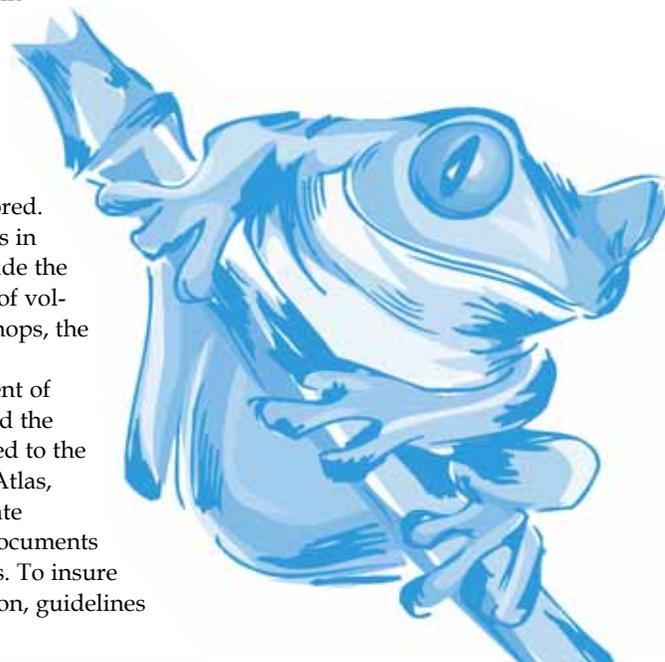
into the NAAMP database. Bob English, director of the TAMP program through the CEE, has restructured the database to allow a more accurate display of amphibian distribution data with GIS. Now this information can be easily accessed for use in land management decisions by wildlife professionals, builders, land-use managers, and landowners statewide.

There are 48 random routes in Tennessee. Each route is selected by the NAAMP, which is TAMP's parent organization. At present, about half of the routes are being monitored. TAMP accomplishments in the past two years include the recruiting and training of volunteers through workshops, the establishment of routes statewide, the assignment of routes to volunteers, and the addition of data gathered to the Tennessee Amphibian Atlas, kept by Austin Peay State University. The Atlas documents amphibian distributions. To insure uniformity in information, guidelines

were established for TAMP that match those used by the Atlas. In addition to the huge satisfaction of establishing new records for species, TAMP was able to contribute a recording of a Barking Tree Frog to NAAMP. It is now being used as part of their nationwide online quiz for amphibian monitoring volunteers.

It takes a special sort of person to be a TAMP volunteer. Before running a route, volunteers must attend a workshop where they learn the calls of Tennessee's frogs and toads and learn the protocol for running the route. Volunteers sometimes drive considerable distances to reach their assigned route and then must deal with traffic noise, barking dogs, and questions from curious landowners. The best results usually come from running the routes in rainy and wet conditions, which most people avoid. For volunteers willing to deal with the late nights and wet conditions, the rewards include the knowledge that their data contribute to both the statewide and national databases on the distribution of frogs and toads.

If you are interested in joining staff and faculty members who are frogloggers, or if you want to know more about the program, don't hesitate to contact Robert (Bob) English at [renglish@mtsu.edu](mailto:renglish@mtsu.edu) or the Center for Environmental Education at (615) 217-8575. ●



## Student Research

continued from p. 4

"Isolation and cloning of the BST1 gene from the zebrafish *Danio rerio*" (Matt Elrod-Erickson, advisor).

**Rick Sharpe** (U) received a scholar-level award of \$1,300 from the CBAS to continue his attempt to engineer a *Shigella* antigenic protein into carrot (Bruce Cahoon, advisor).

**Ying-Fen Swagler** (U) received an assistant-level award of \$500 from the CBAS to learn about fescue chloroplast genome sequencing (Bruce Cahoon, advisor).

**Nathan Wyeth** (U) received a StepMT grant of \$1,000 for "The isolation, enumeration, and identification of fecal coliforms from guacamole" (Mary Farone, advisor).

**Joy Young** (U) received a \$3,150 URSCA award for her study, "Investigation of fin lesions in young lemon sharks, *Negaprion brevirostris* (Poey), about Bimini, Bahamas, and the Marquesas Key, Florida" (George Benz, advisor).

## Student Publications

**Dwayne Estes** (U) coauthored "The Vascular Flora of Rattlesnake Falls: A Potential State Natural Area on the Western Highland Rim Escarpment in Tennessee" in *Sida, Contributions to Botany*.

**Brenda Myers** (G), along with Jeff Walck and Kurt Blum, published "Vegetation Change in a Former Chestnut Stand on the Cumberland Plateau of Tennessee During an 80-Year Period (1921-2000)" in *Castanea*.

**Chad Hanna** (G) and advisor Vince Cobb had the paper "Effect of Temperature on Hatching and Nest Site Selection in the Green Lynx Spider, *Peucetia viridans* (Araneae:Oxyopidae)" accepted in the *Journal of Thermal Biology*.

**Jeff Green** (G), **Tim Worrall** (U), **Jake Pruett** (U), and **Brad Glorioso** (G), along with advisor Vince Cobb, have their paper "Initial Den Location Behavior in a Litter of Neonate Timber Rattlesnakes (*Crotalus horridus*)" in press at *Southeastern Naturalist*.

**Jeff Green** (G) and advisor Vince Cobb coauthored "Coluber constrictor. Reproduction" in *Herpetological Review*. ●

# Students Accepted to Med Programs, Fall 2004 and Fall 2005

**We're pleased to announce the acceptance of fourteen biology majors into medical programs for fall 2004 and twenty-four majors for fall 2005. These students are in programs leading to M.D., O.D., D.O., D.D.S., Pharm.D., and D.C. degrees. Congratulations and best wishes to all!**

## Fall 2004

Barton Barrett, School of Dentistry, University of Alabama-Birmingham  
Jason Blair, College of Dentistry, University of Tennessee-Memphis  
Zaid Brifkani, School of Medicine, Ross University  
Jeffrey Culbreath, College of Dentistry, University of Tennessee-Memphis  
Nathan DeWitt, College of Medicine, University of Tennessee-Memphis  
Brandon Elmore, College of Medicine, East Tennessee State University  
Elizabeth Gillis, College of Dentistry, University of Tennessee-Memphis  
Jodi Leke, College of Pharmacy, University of Tennessee-Memphis  
Sara Loggins, Medical Technology Program, Vanderbilt University  
Brien Polk, College of Dentistry, University of Tennessee-Memphis  
Dennis Starr, College of Medicine, East Tennessee State University  
Jeff Tunney, College of Pharmacy, University of Tennessee-Memphis  
Mike Wilder, College of Pharmacy, University of Tennessee  
John Workman, College of Dentistry, University of Tennessee-Memphis

## Fall 2005

Brian Anderson, Philadelphia College of Osteopathic Medicine (Atlanta, Ga.)  
Justin Anderson, College of Medicine, University of Cincinnati  
Chipta Anerin, College of Pharmacy, University of Tennessee  
Reginald Anunobi, School of Medicine, University of Pittsburgh (Pa.)

Kasey Baldwin, Medical Technology Program, University of Tennessee Medical Center  
Priscilla Campbell, South University School of Pharmacy (Savannah, Ga.)  
Antonio Capps, College of Medicine, University of Tennessee-Memphis  
Carrie Conatser, Quillen College of Medicine, East Tennessee State University  
Sean Crowley, School of Medicine, Meharry Medical College  
Whitney Deason, School of Pharmacy, Campbell University  
Tim Decha-Umphai, College of Medicine, University of Tennessee-Memphis  
Lauren Fox, Occupational Therapy Program, University of Alabama-Birmingham  
Jimmy Harris, Pikeville College of Osteopathic Medicine  
Malik Hazley, School of Medicine, Meharry Medical College  
Ben Jordan, College of Medicine, University of Tennessee-Memphis  
Kevin Luttrell, College of Medicine, University of Tennessee-Memphis  
Nathan Miller, Physical Therapy Program, University of Tennessee Health Science Center  
Kelly Mullins, College of Pharmacy, University of Tennessee  
Ari Oishi, College of Medicine, University of Tennessee-Memphis  
Gina Raymond, College of Medicine, University of Tennessee-Memphis (deferred entrance until fall '06)  
Zach Shelton, College of Dentistry, University of Tennessee-Memphis  
Rachel Thornell, College of Dentistry, University of Tennessee-Memphis  
Elliott Tenpenny, College of Medicine, University of Tennessee-Memphis  
Long Yue, College of Medicine, University of Tennessee-Memphis (deferred entrance until fall '06) ●

## Theses Completed (2003–2005)

The Biology Department is pleased to have graduated 28 students with the master of science degree over the past three years. Nationwide, Middle Tennessee State University is a leader in producing master's-level graduates. Thesis topics have included research on bacteriophages, bacteria, dinoflagellates, angiosperms, ticks, spiders, amphibians, reptiles, and birds. Students investigated pollution, morphology, floral and faunal diversity, physiology, seed germination, enzymology, and antimicrobial activity. A complete list of all 254 theses completed can be found at [www.mtsu.edu/~jddubois/3230/theses.html](http://www.mtsu.edu/~jddubois/3230/theses.html).

**Atwood, Kimberly G.** 2003. Effects of sediment pollution from road construction on a Tennessee stream system (Frank Bailey, advisor)

**Carter, Jesse M.** 2003. Allelopathic and antimicrobial properties of *Ligusticum porteri* (John Zamora, advisor)

**Collins, Sarah L.** 2003. Evaluation of ticks collected from selected eastern states for the presence of *Borrelia* species (Stephen Wright, advisor)

**Dahmen, Jeremy L.** 2005. Temperature effects on lipid composition of Dinoflagellates in the genus *Pyrocystis* (Dinophyceae) with special emphasis on unusual C27 hydrocarbons produced by *Pyrocystis lunela* (Jeffrey Leblond, advisor)

**Fitch, Elizabeth A.** 2004. Photoecology of seed germination for two rare *Lesquerella* species: consequences for management (Jeff Walck, advisor)

**Gerald, Gary W.** 2003. Habitat use, activity patterns, and home range analysis of the Northern Pine Snake, *Pituophis melanoleucus melanoleucus*, at Arnold Air Force Base, Tennessee (Brian Miller, advisor)

**Green, J. Jeffrey.** 2005. Thermal biology of the Eastern Racer (*Coluber constrictor*) in Middle Tennessee (Vince Cobb, advisor)

**Hanna, Chadwick J.** 2005. Thermal consequences of nest-site selection in the Green Lynx Spider, *Peucetia viridans* (Araneae: Oxyopidae) (Vince Cobb, advisor)

**Hayes, B. Jason.** 2005. The use of physical, biological and chemical strategies

for the isolation of a bacterial amoebal pathogen from a cooling tower biofilm (Mary Farone, advisor)

**Ihrie, Patrick D.** 2004. The use of antibiotic resistance and carbon source usage patterns for identification of animal sources of selected *Enterococcus* species in surface waters of the Duck River watershed (Frank Bailey, advisor)

**Jordan, Benjamin E.** 2005. Potential role of avians in the distribution of *Borrelia* species (Stephen Wright, advisor)

**Koczaja, Catherine L. F.** 2004. Polychlorinated biphenyl accumulation in amphibians of Arnold Air Force Base, Franklin, and Coffee Counties, Tennessee (Brian Miller, advisor)

**Kyzar, Juliana W.** 2004. Evaluation of benthic macroinvertebrate metrics as indicators of human impacts on bedrock streams in Tennessee's Inner Nashville Basin (subregion 71i) (Dennis Mullen, advisor)

**Lawrence, Daniel R.** 2005. The evaluation of selected teas for antiviral activity using the T4 bacteriophage neutralization assay (John Zamora, advisor)

**LeBoeuf, Jared P.** 2003. The effects of the inflammatory cytokine TNF- $\alpha$  on transformed rat pancreatic beta-cells (Amy Jetton, advisor)

**Logan-Dunn, Kimber J.** 2003. Isolation and identification of lipase-producing microorganisms (John Zamora, advisor)

**Ludyjan-Ybarra, Tracey A.** 2004. Survey and seasonal activity of Ixodid ticks (Arachnida: Acari: Ixodidae) with identification of four previously unreported

species in Rutherford County, Tennessee (Charles McGhee, advisor)

**McCall, Laura J.** 2004. Dispersal characteristics of two native (*Cornus amomum*, *Frangula caroliniana*) and two nonnative (*Elaeagnus umbellata*, *Ligustrum sinense*), fleshy-fruited shrubs (Jeff Walck, advisor)

**McWhirter, Rebecca D.** 2004. Allelopathic and antimicrobial effects of *Ludwigia* sp (John Zamora, advisor)

**Palmer, David S.** 2004. The evaluation of two native grasses for ground cover usage in the nursery industry (Kurt Blum, advisor)

**Rogers, Jamie L.** 2003. Drink or swim: bacteriological water quality of areas on the Stones River and J. Percy Priest Lake (John Zamora, advisor)

**Skolasinski, Witold J.** 2004. Isolation of an unidentified intracellular bacterial pathogen of *Acanthamoeba polyphaga* from an environmental sample (Anthony Farone, advisor)

**Spiess, Jeremy K.** 2004. An inventory of the herpetofauna of Stones River National Battlefield, Tennessee (Brian Miller, advisor)

**Stinson, Michelle.** 2003. Evaluation of an organism capable of surviving in dandruff shampoo (Stephen Wright, advisor)

**Sulkers, Rachel.** 2005. Habitat selection by Henslow's Sparrows (*Ammodramus henslowii*) during the breeding season in the Southeastern Highland Rim of Tennessee (Jeffrey Walck, advisor)

**Thompson, Jennifer N.** 2003. Microhabitat differences of two cedar glade species: the federally endangered *Dalea foliosa* and its congener *D. gattereri* (Jeff Walck, advisor)

**Tragester, Jerry L.** 2004. The isolation and identification of diazinon-degrading bacteria (John Zamora, advisor)

**West, Adrienne.** 2003. The prevalence of *Salmonella enterica enterica* (Subspecies I) in captive and wild reptiles (Brian Miller, advisor)

# Biology Department Scholarship Winners (Through 2005)

Each year the biology faculty are honored to work with outstanding students who have excelled in the classroom, presented papers at scientific meetings, performed exceptionally on national standardized tests, and conducted independent research. To recognize them, the Department is pleased to offer a number of scholarships. Although these include monetary awards, their intention is to recognize students for efforts above and beyond the expected. Congratulations to each and every recipient. (The last issue of *BioUpdate* to list award recipients was Spring 2002.)

## Mary C. Dunn Freshman Scholarship

2003	Gasche Joan Bittick Andrea Larson
2004	Benjamin Beecham Matthew Neal
2005	Amber Anderton Sean Moore

## Patrick J. Doyle Freshman Scholarship

2003	Brandon Cox
2004	Michelle Buchanan
2005	Dustin Lamb

## Ellis S. Rucker Freshman Scholarship

2003	Jami Vernon
2004	Lliam McFarlane
2005	Elizabeth Tang

## Outstanding Nonmajors

### Freshman Biology Award

2003	Mary Rowland
2004	Amy Henegar Sheree Warrick

## Clay M. Chandler

### Outstanding Freshman Award

2003	Emma Parker Laura Whitson
2004	Larry Waldrop Sara Wohlhueter
2005	Allison Cummings

## Ralph E. Sharp

### Outstanding Sophomore Award

2003	Erin M. Gray
2004	Sarah Hayes
2005	Katherine Powell

## Philip M. Mathis

### Outstanding Junior Award

2003	Travis Luna
2004	Erin Gray
2005	Sarah Hayes

## Peter I. Karl

### Outstanding Senior Award

2002-2003	Eric Freundt
2003-2004	Jason Blair Adam Farmer
2004-2005	Amelia Jane Becker Erin Gray Rodney Kincaid

## George Davis Scholarship

2003	Timothy Worrall
2004	Gale McPherson
2005	Nicole Vaden

## Mitchell Magid Scholarship

2005	Paul Blake Monday
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## Mary Ann Harrison McClary and Richard E. McClary Scholarship

2005	Marsha Wallace
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## Elliott Dawson/BioVentures Biotechnology Scholarship

2003	Megan Sampley
2004	Wesley Skelton Timothy Worrall
2005	Rebecca Davis Heather Hensley

## Maria de los Reyes

### Microbiology Scholarship

2003	Ada Egbuji
2004	Stephen B. Naquin
2005	Stephanie Pereira

## C. Wymer Wisner Medical/Allied Health Award and Scholarship

2003	Courtney Holl
2004	Shawnte George Sara Loggins
2005	Kasey Baldwin

## Eugene F. Strobel Scholarship

2003	B. Jason Hayes
2004	Hailey Seely
2005	Amelia O'Brian

## Wayne Rosing Biology Scholarship

2004	Joseph Dwyer
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## Charles R. McGhee Scholarship

2003	Richard D. Delbridge
2004	Rachel L. Smith
2005	Rachel L. Smith

## James R. Kemp Scholarship

2005	Hailey Seely
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## Sarah H. Swain

### Undergraduate Research Scholarship

2003	Jill Roberson
2005	Jodie Powell Jake Pruet

## George G. Murphy Research Scholarship

2003	Dwayne Coleman James Jeffrey Green
2004	Cathy Koczaja Julie Phillips
2005	Brad Glorioso Jennifer Freimund

## John D. DuBois Scholarship

2003	Jeremy Dahmen
2005	Jason Hayes

## Sarah F. Barlow Scholarship

2003	Heather C. Cain
2004	George Richie Wyckoff
2005	Rebecca Davis

## Kurt E. Blum

### Botany Research Scholarship

2003	David S. Palmer
2004	Rachael Sulkers Andrea Wonnell

## William H. Butler Jr.

### Graduate Research Scholarship

2003	Catherine Koczaja
2004	Jeremy Dahman Matthew Niemiller Amy Tolley
2005	Efua Adetona Julie Phillips

## Thomas E. Hemmerly

### Graduate Research Scholarship

2003	Laura McCall
2004	Chad Hanna
2005	Julie Phillips Roger Street

## John M. Zamora

### Graduate Research Scholarship

2003	Tracey Ludyjan-Ybarra
2004	Justin Anderson George Richie Wyckoff
2005	Kyle Sykes

continued on p. 26

# TAS holds 114th and 115th Meetings

There have been two meetings of the Tennessee Academy of Science since the last issue of *BioUpdate*. The TAS held its 114th meeting at Columbia State Community College (CSCC) November 18–19, 2004, and the 115th meeting at the University of Tennessee–Martin (UTM) on November 18, 2005. The MTSU Biology Department continued its strong support at both meetings. The 116th meeting (2006) will be held at Austin Peay State University in Clarksville.

Stephen M. Wright served as the academy's 2004 president-elect and as the 2005 president. Sarah H. Swain continues as secretary and M. Gore Ervin as managing editor of the *Journal of the Tennessee Academy of Science*. Cindi Smith-Walters and Charles R. McGhee continue their service as chairs of the Education Committee and the Fellows Committee, respectively. George Murphy chaired the 2004 Long Range Strategic Planning Committee and currently serves on the Necrology Committee. Kim Cleary Sadler serves on the Education Committee and the Publicity Committee, and Stephen M. Wright serves on the Nominating Committee. A strong pat on the back to all these individuals for their hard work and commitment to TAS!

## 2004 MEETING

The plenary session keynote address, "Avian Influenza," was delivered by Jacqueline Katz, Centers for Disease Control and Prevention. Her research focuses on the avian influenza A viruses, in particular the highly pathogenic H5N1 subtype.

Stephen Wright moderated the TAS symposium "Public Health Issues in Tennessee." Presentations included "Bioterrorism: Is Tennessee Prepared?" by Allen Craig, state epidemiologist and director of Communicable and Environmental Disease Services at the Tennessee

Department of Health; "Food-borne Illness and FoodNet in Tennessee," by Timothy Jones, deputy state epidemiologist and director of the Tennessee FoodNet program; and "Update: West Nile Virus," by Gary Swinger, coordinator for the West Nile Virus Surveillance Program in Tennessee. Karen Kendall-Fite (B.S. '75, M.S. '93) chaired the local organizing committee. Chairing sessions at the meeting were: Anthony Farone and Mary Farone (cell and molecular biology, health and medical sciences, and microbiology) and Kim Cleary Sadler (science and math teaching). Papers and posters presented are listed below with student authors or coauthors designated with an asterisk (\*) and student presentation awards given in parentheses.

## Papers

Nicole Welch, Dwayne Coleman\*, and Christopher Meyers\*, "Table Mountain Pine (*Pinus pungens* Lamb.) Regeneration Following a Wildfire in the Cherokee National Forest/Foothills Parkway, Tennessee."

Dwayne Coleman\*, Christopher Meyers\*, and Nicole Welch, "Seasonal Changes in Biomass and Species Composition in Table Mountain Pine (*Pinus pungens* Lamb.) Forests of the Great Smokey Mountains National Park, Tennessee." (Second Place, Botany Section)

Benjamin E. Jordan\* and Stephen M. Wright, "The Detection of *Borrelia* Species in Nonmigratory Avians in Tennessee." (First Place, Cell and Molecular Biology Section)

Katherine R. Onks\* and Stephen M. Wright, "Evaluation of Fluorescence-Based Antigen-Antibody Binding through Microarray Confocal Scanning." (Second Place, Cell and Molecular Biology Section)

Daniel P. Lawrence\* and John M. Zamora, "The Evaluation of Selected Teas for Antiviral Activity Using the T4 Bacteriophage Neutralization Assay."

Stacie N. Jefferson\* and John M. Zamora, "Alleopathic and Antimicrobial Properties of *Taebuia impestigiosa*."

Jeremy L. Dahmen\*, Jeffrey D. LeBlond, Rebecca L. Seipelt, Matthew J. Elrod-Erickson, A. Bruce Cahoon, and Rodney Kincaid\*, "Lipid Composition of Chlorarachniophytes (*Chlorarachniophyceae*) from the Genera *Bigelowiella*, *Gymnochlora*, and *Lotharella*."

Anthony L. Newsome, "Characterization of Solid-Supported Reagents."

Nicole Welch, "Comparing Student Performance in Online and Traditional Sections of an Introductory Biology Course for Nonscience Majors."

Kim Sadler and Sandra Johnson, "A Preliminary Study of Linked Learning Communities and Introductory College Biology Classes."

Judith Shardo, "Variation in Early Neuromasts of Teleost Fish."

Chad Hanna\* and Vince Cobb, "Thermal Effects on Green Lynx Spider Egg Sacs and Hatching." (Third Place, Zoology Section)

Tracey A. Ludyjan-Ybarra\* and Charles McGhee, "New and Previously Reported Ixodid Ticks of Rutherford County, Tennessee."

Brian T. Miller and Matthew L. Niemiller\*, "Distribution of the Tennessee Cave Salamander, *Gyrinophilus pallescens*, in Middle Tennessee."

Matthew L. Niemiller\* and Brian T. Miller, "Comparative Demography of the Tennessee Cave Salamander, *Gyrinophilus pallescens*, in Middle Tennessee." (First Place, Zoology Section)

Jake Pruett\* and Vince Cobb, "Body Temperature of Free-Ranging Timber Rattlesnakes in Middle Tennessee."

J. Jeffrey Green\* and Vince Cobb, "Daily Body Temperature Selection of Black Racers (*Coluber constrictor*) in Middle Tennessee." (Second Place, Zoology Section)

## Posters

Mary B. Farone, Jason K. Alexander, and Anthony L. Farone, "Pathogenic Effects of Three Novel Bacterial Isolates on Human Macrophages."

Tiffany Guess\*, Anthony L. Farone, and Mary B. Farone, "Reovirus Serotype-Dependent Replication Differences in a Human Monocyte Cell Line." (First Place, Cell and Molecular Biology Section)

Elizabeth G. Reed\* and John M. Zamora, "Evaluation of the Bacterial Levels of the Stones River and J. Percy Priest Lake."

Allison Cummings\* and John M. Zamora, "The Herbicide Roundup™ Has an Inhibitory Effect on Microorganisms."

Wesley Skelton\*, Jessica G. Gentry, and Mary B. Farone, "The Isolation and Identification of *Escherichia coli* Strains Responsible for Calhoun Scours." (Second Place, Microbiology Section)

Witold Skolasinski\*, B. Jason Hayes\*, Mary B. Farone, and Anthony L. Farone, "The Isolation and Identification of Novel Bacterial Amoebal Pathogens from Manmade Water Sources." (First Place, Microbiology Section)

Nathan Wyeth\* and Mary B. Farone, "The Isolation, Enumeration, and Identification of Fecal Coliforms from Guacamole."

Brad M. Glorioso\*, Matthew L. Niemiller\*, George R. Wyckoff\*, and Brian T. Miller, "Demography of Two Sympatric Turtles from an Urban Setting in Rutherford County, Tennessee."

George R. Wyckoff\* and Brian T. Miller, "A Look into a Diverse Reptile and Amphibian Community of a Wetland at Arnold Air Force Base." (Second Place, Zoology Section)

## 2005 MEETING

The plenary session keynote address, "Tsunami 2004," was delivered by S. K. Ballal, Tennessee Technological University. Dr. Ballal is a current fellow of the Tennessee Academy of Science and served as its president in 1982. Stephen Wright, 2005 president, presided at the business meeting. Vince Cobb, along with his students Brad Glorioso and Elizabeth Young, copresented "Freshwater Turtle Population of Reelfoot Lake" as part of the Reelfoot Lake Symposium. Chaired sessions at the meeting were Nicole Welch (botany) and John Zamora (microbiology). Papers presented are listed below with student authors or coauthors designated with an asterisk (\*) and student presentation awards given in parentheses.

## Papers

Katie R. Onks\*, Steve W. Hamilton, and Stephen M. Wright, "Both *Borrelia burgdorferi* (Lyme Disease) and *Borrelia lonestari* (STARI) Are Established in Middle Tennessee." (First Place tie, Cell and Molecular, Health and Medical, Microbiology Section)

Rebecca Davis\* and Stephen Wright, "Differentiation of Influenza A Viruses Using Host-Specific Probes Based on Conserved Nucleotide regions." (First Place tie, Cell and Molecular, Health and Medical, Microbiology Section)

Vivak M. Master\*, Travis R. Denton, Clint E. Holman, William M. Robertson, and Stephen M. Wright, "Evaluation of Antigen-Antibody Interaction through Microarrays: Potential for a Novel Biosensor."

Christina L. Nelson\* and John Zamora, "Allelopathic and Antimicrobial Properties of the Ayurvedic Herbs Neem and Gotu Kola."

Brandon Naquin\* and John Zamora, "The Isolation and Identification of Antimicrobial-Producing Organisms."

Rebecca L. Seipelt and A. Bruce Cahoon, "Integrating Scientific Discovery Research Projects into the Classroom."

Charles R. McGhee, "The Morphology and Taxonomic Status of *Leiobunum serratipalpe* Roewer (1910) (Arachnida: Phalangida: Leiobuninae)."

Brad M. Glorioso\*, Elizabeth L. Young, and Vince A. Cobb, "Feeding Activity of Stinkpots (*Sternotherus odoratus*) at Reelfoot Lake, Tennessee." (Second Place, Zoology II Section)

## Posters

Michael W. Thompson, Carrie E. Romer\*, and Rebecca L. Seipelt, "Tyrosine 244 Stabilizes the Transition State of the Peptidase Reaction of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase."

Erin D. Archer\*, Rebecca L. Seipelt, and Michael W. Thompson, "A Conserved Tryptophan Residue with an Altered pKa Is Essential for the Peptidase Reaction of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase." (Second Place, Cell and Molecular Biology Section)

Karen Metius-House\* and Kim Cleary Sadler, "A Cedar Glade Plant Population Study with Elementary Students." (First Place, Science & Math Teaching)

Matthew L. Niemiller\*, Brad M. Glorioso\*, Christina Nicholas\*, Julie Phillips\*, Jessica Rader\*, Elizabeth Reed\*, Kyle L. Sykes\*, Jason Todd\*, George R. Wyckoff\*, Elizabeth L. Young\*, and Brian T. Miller, "Notes on the Reproduction of the Streamside Salamander, *Ambystoma barbouri*, from Rutherford County, Tennessee." (Second Place, Zoology) ●

## Full-Time Temporary and Adjunct Faculty Fill Important Roles

### Let's hear from you!

If you know alumni who don't receive this newsletter, please ask them to send us their contact information. Future issues will include a section on alumni news.

#### Send updates to

Biology Department  
MTSU Box 60  
Murfreesboro, TN 37132

FAX: 615/898-5093  
E-mail: [jddubois@mtsu.edu](mailto:jddubois@mtsu.edu)

We'd also like to hear from you if there has been a change of address, name, or occupation.

The department has hired six full-time temporary and three adjunct faculty members to help shoulder the heavy teaching loads. These faculty lecture and/or hold laboratory sessions in non-major introductory biology, genetics, microbiology, human anatomy and physiology, comparative anatomy, environmental regulations and compliance, and radiation biology. Without temporary and adjunct faculty, the teaching loads of tenured and tenure-track faculty members would be much heavier. The service of temporary and adjunct faculty allows others to gain release time for public service projects and research. The department appreciates the service of these people.

#### Full-Time Temporary

Amy Massengill, D.V.M.,  
University of Florida, Gainesville

Mary Penuel-Matthews, M.S.,  
Middle Tennessee State University

David Powell, M.S.,  
Middle Tennessee State University

Teresa Stegall-Faulk, M.S.,  
Middle Tennessee State University

Michael Thompson, Ph.D.,  
University of Kentucky

Letha Woods, Ph.D.,  
Meharry Medical College

#### Adjunct

Bipin Agarwal, M.E.,  
University of Virginia, Charlottesville

Stephen Maloney, M.S.,  
Middle Tennessee State University

Walter Ponath, M.S.,  
Middle Tennessee State University

## Biology Department Scholarship Winners *continued from p. 23*

#### Mary C. Dunn Graduate Scholarship

2003-04 Elizabeth Fitch  
Juliana Kyzar  
2004-05 James Jeffrey Green  
Matthew Niemiller  
2005-06 Brad Glorioso  
Jennifer Freimund

#### J. L. Fletcher Graduate Scholarship

2003 Jeremy Dahmen  
2004 Daniel Lawrence  
2005 Christina Nelson

#### Charles Holland

**Biology Club Scholarship**  
2003 Rachael Sulkers  
2004 B. Jason Hayes  
2005 Matthew Niemiller

#### Kevin Driver Memorial Scholarship

2003 Jim Harris  
2004 Jake Pruett  
2005 Joy Young

#### J. Gerald Parchment

**Biological Field Station Scholarship**  
2004 Glenn Rohrbach  
2005 Joy Young

#### John A. Patten Scholarship

2003 Adam Farmer  
Rebecca Fraley  
Kelli North  
2004 Rebecca Fraley  
Timothy Worrall  
2005 Joy Young

#### David Sanborn Ecology Scholarship

2004 Jessica Lacy  
2005 Whitney Humphrey

#### Marion R. Wells

**Graduate Research Scholarship**  
2003 James Jeffrey Green  
2004 Brad Glorioso  
2005 Matthew Niemiller

#### Outstanding Graduate

##### Teaching Assistant

2003 Sarah Collins  
Heather C. Corban  
2004 Cathy Koczaja  
Juliana Kyzar  
2005 Dwayne Coleman  
Rebecca Davis

##### Major Field Test High Score

Spring 2003 Eric Freundt  
Fall 2003 Brien Polk  
Spring 2004 Christopher Whitten  
Fall 2004 Cody Smith  
Spring 2005 Amelia Jane Becker

### Spring 2004

Meghan Davis, BioVentures  
(Murfreesboro, Seipelt)  
Brandon Naquin, Cumberland Swan  
(Smyrna, Seipelt)  
Megan Klein, Orchid Cellmark  
(Nashville, Seipelt)  
Courtney Holl, Orchid Cellmark  
(Nashville, Seipelt)  
Carrie Romer, Vanderbilt University  
Genetic Counseling Center  
(Nashville, Seipelt)

### Summer 2004

Jenny Berry, Sumner Regional Medical  
Center (Gallatin, Murphy)  
Daniel Dorset, Esoterix Center for  
Innovation (Brentwood, Seipelt)  
Rebecca Ward, Orchid Cellmark  
(Nashville, Seipelt)  
Sarah Cunningham, Orchid Cellmark  
(Nashville, Seipelt)  
Emily Thomas, Vanderbilt University  
Genetic Counseling Center  
(Nashville, Seipelt)

### Fall 2004

Julie Delong, Sea Life Park  
(Hawaii, Murphy)  
Cody Smith, Orchid Cellmark  
(Nashville, Seipelt)

### Spring 2005

Rebecca Fraley, York VA Hospital  
(Murfreesboro, Murphy)  
Jessica Lacy, Tennessee Aquarium  
(Chattanooga, Murphy)  
Amanda McPherson, Cedars of Lebanon  
State Park (Lebanon, Murphy)  
Kathryn Lindsay, Orchid Cellmark  
(Nashville, Seipelt)  
Heather Hensley, TBI  
(Nashville, Seipelt)  
Misty Neal, TBI (Nashville, Seipelt)  
Kimberly Cubit, Vanderbilt University  
Genetic Counseling Center  
(Nashville, Seipelt)

### Summer 2005

Prima Patel, Orchid Cellmark  
(Nashville, Seipelt)  
Randi Paschall, Orchid Cellmark  
(Nashville, Seipelt)  
Aneta Rusek, Biomedical Internship  
with Dr. Mashchak  
(Chattanooga, Seipelt)

### Fall 2005

Christie Nelson, Orchid Cellmark  
(Nashville, Seipelt)  
Marsha Wallace, Grassmere Zoo  
(Nashville, Seipelt)

Rebecca D. Mc Whirter and John M.  
Zamora, "Antimicrobial and  
Allelopathic Properties of *Ludwigia* sp."

Jerry L. Trageser and John M. Zamora,  
"Isolation and Identification of  
Diazinon-Degrading Bacteria"

### Biology Student Authors, Fall 2004 Issue Full-Length Research Articles

Melinda C. Beckman, Erin N. Lewis,  
Tiffany E. Guess, and Anthony L.  
Farone, "Reovirus-Mediated Apoptosis  
in Human Monocytes"

Megan B. Davis and Philip M. Mathis,  
"Longevity in Female *Drosophila*  
*melanogaster* in Relation to Acp62F  
Protein Exposure and Male or Female  
Companionship"

### Abstracts of papers presented at the annual Undergraduate Research Symposium, April 15, 2005

John Lewis, James Hula, and Chris  
Davis, "Chromium Picolinate: A Health  
Supplement or Health Risk?"

Erin Archer, Michael Thompson, and  
Rebecca Seipelt, "Creation, Expression,  
Purification, and Kinetic Character-  
ization of Yeast Leukotriene A4 Hydro-  
lase Mutant W356L"

Trish Bias, Martha Peterson, and  
Rebecca Seipelt, "Inducing B Cells to  
Become Plasma Cells by Transfection of  
SFERS6"

Lauren Buntley, Martha Peterson, and  
Rebecca Seipelt, "LSM6 May Play a Role  
in B Cell Development"

Carrie Carlton, Martha Peterson, and  
Rebecca Seipelt, "To B or Not to B:  
Alternative RNA Splicing in B Cells and  
Plasma Cells Due to FUSIP1 Gene  
Expression"

Chance Mysayponh and A. Bruce  
Cahoon, "Fescue Ky31 Chloroplast  
Genome Sequencing and Analysis"

Jesse W. Gilliam, Brock A. Arivett, Keith  
W. Beckman, Mary B. Farone, and  
Anthony L. Farone, "The Isolation and  
Identification of Unculturable Amoebal  
Pathogens from Cooling Tower Water  
Samples"

Jason Hooper, Martha Peterson, and  
Rebecca Seipelt, "The Action of SUPT4H  
in the Transformation of B Cells to  
Plasma Cells"

Arlyn Horn, Martha Peterson, and  
Rebecca Seipelt, "Metamorphosis of B  
Cells into Plasma Cells Using TBPIP  
Isolated from Mouse Plasma Cells"

Will Isom, Martha Peterson, and  
Rebecca Seipelt, "Introduction of hnRPD  
into B Cells to Induce Plasma Cell-like  
Behavior"

Nathan Wyeth and Mary B. Farone,  
"The Isolation, Enumeration, and  
Identification of Fecal Coliforms from  
Guacamole"

Olivia Dees, Christopher Meyer, Nicole  
Turrill Welch, and Norma Dunlap,  
"Potential Allelochemicals in *Kalmia*  
*latifolia* (mountain laurel) and Their Effect  
on *Pinus pungens* (table mountain pine)  
Seed Germination"

Jake Pruett and Vince Cobb, "Influence  
of Weather on Body Temperature  
Regulation in Timber Rattlesnakes"

Katherine R. Onks and Stephen M.  
Wright, "Microarray Detection and  
Differentiation of Antigen-Antibody  
Binding"

Marsha Wallace, Martha Peterson, and  
Rebecca Seipelt, "Transformation of B  
Cells into Plasma Cells by SSFA1  
Expression"

Shannon Woods, Stefani Samples,  
Evelyn Gutierrez, and Rebecca Seipelt,  
"Human Birth Order Is Inconsistent  
with Predictions Based on Ordered  
Probabilities" ●

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## **New Electron Microscopes**

New digital electron microscopes will soon be operational at MTSU. The Hitachi H-7650 transmitting electron microscope and S-3400N scanning electron microscope will replace existing electron microscopes purchased in the 1980s. Funding (\$500K) is courtesy of Dr. Abdul Rao, former vice provost for Research and dean of the College of Graduate Studies. In addition, a new Oxford Energy Dispersive X-ray microanalysis with a liquid-free nitrogen detector will be installed on the scanning electron microscope. This equipment will be used by faculty for teaching, research, and service. Students will have access via coursework and research, as has been the custom since 1976.

The new microscopes will be housed in the Forrest Hall Annex East. The new facility will occupy 2,000 square feet, much more room than the previous EM facility in Wiser-Patton Science Hall, which only had 500 square feet of space. Dr. Marion Wells, retired from the department and on a half-time postretirement appointment, has been the caretaker of the former EM facility for the past 32 years and has used the previous microscopes for research and consulting as well as teaching the EM courses. The anticipated date for purchase and installment of the new microscopes is fall 2006.